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1885
JANE LATHROP STANFORD
JEWEL FUND

ANNUAL REPORT

OF THE

DEPARTMENT OF HEALTH

OF THE

CITY OF BROOKLYN,

FOR

1884.

BROOKLYN:
PRINTED FOR THE CORPORATION.
1885.

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Comparative Table of Mortality by Prominent Causes of Death in ten years.

CAUSES.	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.
Total from all	12,470	12,334	11,362	11,075	11,569	13,222	14,533	15,013	13,758	14,116
Zymotic class	4,467	4,360	3,962	3,192	3,283	4 310	4,952	4,880	3,664	3,747
Smallpox	619	309	5	......	......	2	35	12	1	......
Measles	8	159	10	67	38	156	56	168	69	114
Scarlet fever	304	352	730	363	344	222	651	892	505	218
Diphtheria	965	812	778	544	689	1,118	1,169	632	409	385
Croup	440	412	325	317	250	420	438	334	318	280
Whooping cough	181	190	118	195	204	111	118	248	132	222
Typhoid fever	111	97	85	59	59	71	99	83	92	107
Malarial fevers	137	137	154	184	145	256	306	289	258	272
Cholera infantum	1,008	1,043	953	666	680	975	1,028	1,007	791	856
Diarrhœal, dis , all ages	1,395	1,546	1,461	1,165	1,258	1,602	1,707	1 893	1,597	1,836
Diarrhœal, dis., under 5 years	1 262	1,367	1,300	1,011	1,073	1,407	1,493	1,600	1,340	1,576
Consumption	1,522	1,539	1,587	1,509	1,665	1,736	1,754	1,806	1,847	1 913
Bronchitis	369	397	314	365	479	495	471	684	573	622
Violence	312	622	299	294	316	420	402	433	414	440
Under 5 years	6,387	6,242	5,560	5,294	5,201	6,215	6,865	7,136	5.838	6,271
Under 1 year	3,401	3,179	2,871	2,943	2,881	3,343	3,633	3,816	3,500	3,924
Death rate per 1,000	25.84	24.76	22.10	20.85	21.08	23.33	24.83	24.84	22.04	21.90

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The vaccinating corps has been at work, except during the summer, when their time was employed in improving the sanitary condition of the tenement houses. The physicians of this service have found 9,055 persons unvaccinated; have visited 11,711 houses, have offered vaccination to 35,820 families, and have vaccinated 7,325 persons.

The following table shows the number of reported cases of smallpox by months.

Reported Cases of Smallpox.

	1883.	1884.		1883.	1884.
January	1	4	July	None.	2
February	2	None.	August	None.	None.
March	4	1	September	None.	1
April	3	None.	October,	None.	None.
May	2	2	November	None.	None.
June	None.	4	December	None.	None.
Total				12	14

In an appendix to this report will be found tables of contagious diseases for the period 1877–1884, inclusive.

SANITARY WORK IN ANTICIPATION OF CHOLERA.

A conference of State and Municipal Boards of Health was held in Washington, D. C., Dec. 10, to consider the subject of cholera with reference to its threatened appearance in this country in 1885, and to adopt measures to prevent its entrance, if possible; or, should these be unsuccessful, to reduce its ravages to a minimum.

Health officers were requested to present reports stating what had been done in their respective localities to prepare for its probable advent. In response thereto the following report was prepared and read at the conference. As it includes much of the work of the current year which it is customary to present to your honor in the annual report, I take the liberty of making it a part of my report.

DEPARTMENT OF HEALTH.

BROOKLYN, Dec. 4, 1884.

To the Representatives of State and Municipal Boards of Health:

GENTLEMEN—In accordance with your request I beg herewith to submit a report of the work of the Department of Health of the city of Brooklyn with reference to placing the city in a proper condition to meet the probable advent of cholera the coming summer.

WATER SUPPLY.

Two years ago there existed within the city of Brooklyn three hundred and sixteen pump wells. These were the ordinary surface wells dug to a sufficient distance in the earth to reach water, this distance varying from fifteen to one hundred feet. An analysis of the water of these wells showed that of this whole number but seventeen furnished water fit for human consumption; of the entire number three hundred and seven have, upon the recommendation of this Department, been filled by order of the Common Council, leaving but nine in the city, and these it is to be hoped the Common Council will close during the present winter; if not, should cholera come, they will be closed by this Department. Having thus done away with a possible agent in the spread of cholera, namely, the impure water furnished by surface wells, the attention of the Department was next drawn to the sources of the Ridgewood water supply, the only other water supply of the city, and investigation is now being made by representatives of the Departments of Health and City Works, which will show to what extent, if any, this water supply is imperilled, and immediate steps will be taken to remove all possible sources of contamination. This being done it may be safely assumed that Brooklyn need have no anxiety for the spread of cholera through its water supply.

NOTE.—The wells which now exist in the city are situated as follows:

Thirteenth Ward—First street cor. South First street.

Sixteenth Ward—Eleventh street cor. South Third street.

Sixteenth Ward—Eleventh street cor. South Fifth street.

Eighteenth Ward—Starr street bet. Hamburg and Knickerbocker avenues.

Twentieth Ward—Carlton avenue cor. Fulton street.

Twenty-fourth Ward—Howard avenue cor. Bergen street.

Twenty-fourth Ward—Rockaway avenue cor. Bergen street.

Twenty-fourth Ward—Albany avenue bet. Sackett and Union streets.

Twenty-fourth Ward—Clove Road near Crown street.

Twenty-fourth Ward—Degraw street between Ralph and Howard avenues.

PONDS.

Cholera has appeared in Brooklyn as an epidemic three times since the year 1848. The last epidemic occurred in the year 1866, and resulted in the death of 517 inhabitants. The population of the city at that time was three hundred and thirteen thousand, about one-half its population at the present time. The disease appeared most prevalently and most fatally in the Twelfth ward. This section of the city is one which is, to a great extent, composed of filled in ground, being originally covered by salt water, with marshes and islands interspersed. In the improvement of this part of the city, streets have been constructed, leaving between them ponds of water, which, being stagnant, became offensive. This was the condition of things in 1866. Why the disease attacked this portion of the city more than any other it is difficult now to say; but I find in looking over the records that special mention is made of a pump situated upon Van Brunt street which was looked upon by the health officials at that time as being largely instrumental in the spread of the disease in that section of the city. There is no doubt about one thing, whatever else may be said, and that is, that this section of the city was at that time water-soaked, and thus probably was adapted to the propagation of any germs that found a lodgment there.

Since that period very many of these ponds have received from time to time a certain amount of filling, but not enough to completely obliterate them. Last summer (1884) special effort was made to fill these ponds, and also all others in the city. Fifty-five ponds have thus been filled at an expense of $26,721. It is a source of gratification to me that all the filling of lots during this past summer by the Department of Health, has been with clean material entirely free from garbage, and in every way unobjectionable.

At the present time there exists in this section of the city but one pond, and measures have been taken which will, before the advent of spring, cause this one also to be completely filled.

The same action which has been taken in the Twelfth Ward has been followed throughout the city generally, so that we have to-day in the city of Brooklyn but six ponds which will be likely in any way to serve as abettors in the propagation of the disease, should it come, and action has been taken in reference to these which will result in their abatement during the present winter.

PRIVY VAULTS.

The first census, so far as I am aware, that was ever made of the privy vaults of Brooklyn was made at the request of the Department of Health by the police of the city in the year 1878. At that time there were twenty-five thousand privy vaults in the city. Of this number fourteen thousand were known as not water-tight; that is, built with stone, as a rule, loosely placed together, without cement, and with no attempt to prevent soil saturation. In addition to these there were eleven thousand vaults which were nominally water-tight, and were constructed in accordance with the Ordinances; that is, they were built of brick and cement, and were connected with the sewer. For several years this Department has been earnestly striving to eradicate from the city every privy vault which could be eradicated, and to-day every one which is upon a sewered street which is not legally constructed is under orders for its abolition. During the past six years several thousand have been abolished, just how many it is impossible to say at the present time, as the figures are now being made up. We have up to this time been unable to proceed against the legally constructed privy vaults, eleven thousand in number. Attempts have been made by the Department to have the Ordinances so altered as to entirely do away with all privy vaults when located upon lots adjacent to existing sewers. These efforts have thus far been unsuccessful. A communication is now before the Common Council of this city, calling their attention to the danger connected with vaults of this kind, permitting, as they do, human excrement to accumulate and decompose, and to serve as a nidus for the germs of disease, and requesting the repeal of the existing Ordinance and its substitution by one which will not only prevent the further construction of these vaults, but will require the abolition of those now existing; and also requiring that where privy vaults are built upon lots in streets where sewers do not exist, such vaults shall be built so as to prevent all possibility either of the contamination of the soil or of the porous material of which the vault is built. It may be said, in passing, that in new houses no privy vaults of any kind are permitted where sewers exist, only water closets are allowed.*

The communication to the Common Council in reference to this matter is hereto appended, and in this will be found in detail the reasons for this recommendation. Special arrangements have already been made with the Police Department by which all the privy vaults of the city will be inspected at least once a month, and immediate steps taken by the Health Department to abate any nuisances that may be found. If the desired change above referred to is made in the Ordinances, and all vaults abolished which will thus be rendered illegal, the number remaining will be so small as to permit an examination as often as twice or even three times each month. These reports of the condition of the vaults will be followed up by disinfecting officers from the department, who will attend to the disinfecting of the contents of these vaults. The officers of the department will thus be enabled to disinfect and keep disinfected the contents of all vaults.

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*RULE 17. ON STREETS THAT ARE SEWERED —All buildings that are located upon a street in which a public sewer exists, must be provided with water-closets, either in the house or yard ; privy vaults will not be permitted when a public sewer exists in the street.

NIGHT SOIL.

Under the present arrangements night soil is collected from the vaults in a manner which is free from objection.

The removal is effected only during daylight, when any nuisances connected therewith could easily be seen, and after thorough disinfection of the material; the apparatus employed is that which is known as "Odorless," so that there is no improvement which could be suggested in the method by which night soil is now removed from the vaults of this city. For the past few years, since the use of the dock at the Wallabout was abandoned for the removal of night soil and dead animals, the night soil which has been collected in Brooklyn has been removed to the country and deposited upon farms, and utilized as a fertilizer. Before permission was given to the scavengers to thus dispose of the night soil, it was required of them that they produce the permission of the owner of the farm, and also a permit from the Board of Health of the town in which the farm was situated. It was believed that these requirements would prevent the establishment of any nuisances upon neighboring towns. This system has now been in vogue for three years and the amount of night soil which has been thus disposed of is not far from five hundred thousand cubic feet. Should cholera come it would probably be necessary to otherwise dispose of this material, and arrangements would have to be made to carry it to sea.

SEWERS.

The condition of the sewers of Brooklyn as to cleanliness was probably never better than it is at the present time. The Commissioner of City Works, through his competent Superintendent of Sewers, has given this matter great attention, and I am persuaded that the reduction in zymotic diseases which has occurred in Brooklyn during recent years is in no slight degree due to this condition of the sewers. Special attention will be given to the sewers of those localities in which cholera may appear, to see that they are kept cleansed and well flushed.

MEDICAL INSPECTION.

The residences of the Medical Inspectors of the Health Department, twelve in number, will be connected by telephone with the Health Office, so that all reports of cases which are received can be at once communicated to them and receive prompt attention. In addition to the regular corps of Medical Inspectors arrangements have been made by which a special corps of physicians will be appointed, whose duty it shall be to visit regularly all tenement houses, a list of which is on file in this office, and all localities where people are likely to be without medical assistance, with the object in view of administering remedies for the premonitory diarrhœa, and disinfecting infected clothing and fumigating infected premises. The methods of disinfection and fumigation at present practiced are those adopted by the National Board of Health in 1879, and recommended by our State Board of Health. Sulphur, sulphate of zinc, common salt and copperas are the principal agents employed; in the present aspect of sanitary science the bichloride of mercury might with advantage be added to this list, as has already been done by some Boards of Health, notably that of Boston. The necessity for a thorough re-examination of disinfection and disinfectants was duly appreciated by the American Public Health Association at its recent meeting in St. Louis, and a committee which was then appointed is now at work upon this important subject.

HOSPITALS.

It is difficult, previous to the advent of the disease, to locate hospitals, inasmuch as such buildings should be situated in the immediate locality affected, it having been abundantly proved that the removal of persons sick with cholera to a long distance from their homes is very injurious and has, in no small number of cases, contributed to a fatal termination. It may also be questioned whether a better plan than a general establishment of hospitals would not be to vacate the infected houses; that is, to leave within them only the sick, and to require those that are well to seek refuge elsewhere,* for a house which becomes infected by the sick person is, as is well known, a house that will infect those that are well. It will of course be necessary to have some hospital provision made for persons who are unable, through poverty or other cause, to obtain the necessary nursing and care at their own homes; but I question very much whether a general removal of infected persons from their homes to hospitals is a wise measure.

In this connection permit me to call attention to the remarkable results reported by Edwin Chadwick, Esq., C. B., in his address entitled, "Precaution against Cholera," and reproduced in the Appendix to this report. In the last epidemic of cholera which fell upon Limehouse, he says that the children of the pauper half-time school were distinguished by their entire exemption from any choleraic attack, and attributes this exemption to careful head-to-foot washing with tepid water. He gives also other striking instances of the comparative immunity which personal cleanliness confers on individuals, not only in times of epidemics but under ordinary circumstances. His observations are well worthy of careful perusal, and of adoption, not only by the managers of public institutions but also by individuals.

ITALIAN QUARTERS

Special attention has been given to the quarters occupied by Italians, of which people there are in Brooklyn, upon the lowest estimate, ten thousand. Few of these can speak English, and to accomplish anything in the way of sanitary improvement among them requires the constant efforts of one of their own nation. Such an inspector has been engaged in this duty for several months, and will be continued in the work. The nature of the employment of this portion of our population is such as to bring them constantly in contact with rags, bones, and all manner of filth which, unless watched, they bring to their homes and accumulate in large quantities.

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*In this connection see "Precautions against Cholera," an address delivered in August, 1884, by Edwin Chadwick, Esq., C. B., and especially the extracts given in the appendix to this report.

The accumulation of rags is one which should be kept under the surveillance of health departments, and an ordinance has been asked for in Brooklyn to prohibit the storing of them except in such localities as are approved.

LODGING HOUSES.

Brooklyn has, at the present time, nine cheap lodging houses, containing in all five hundred and thirty-two beds. In these houses congregate a large portion of the poor floating population of the city. Coming from vessels lying at the dock, or from neighboring cities, some are quite regular in their attendance, while others come to-night and are gone to-morrow. These houses have been thoroughly examined from cellar to attic, and where defects of sewerage or ventilation have been found, they have been corrected. The disinfecting officers are at work, disinfecting and fumigating them throughout, and the sanitary inspectors have been directed to visit them frequently and keep close watch upon them. The proprietors have been summoned to the Health office, and instructions have been issued to them which will result in keeping these buildings in good condition, and in making us aware of the existence of any suspicious sickness.

LAUNDRIES.

The number of cases of cholera which have occurred from washing infected clothing, suggests that precautions should be taken in every public laundry. These establishments receive clothing from unknown sources and are the means of spreading the disease. The idea has occurred to me that if proper disinfecting solutions should be kept upon these premises, and the proprietors be required to soak all clothing that was received in this solution, immediately upon its receipt, before washing, the danger of the spread of infection from this source might be avoided. Or some method of applying dry heat of sufficient intensity might be deemed more efficacious, or both combined.

FOOD SUPPLY.

It is conceded that the food supply during the times of a cholera epidemic is an important agent in the predisposition of individuals to attacks of the disease. Koch, if I mistake not, calls attention to the greater liability of contracting the disease, when from any cause the alimentary canal is in an abnormal condition. Whether this is true or not we know that when the body is properly nourished, individuals are more able to withstand attacks of disease and even to escape them, than when, from any cause, they are in a debilitated condition. With this in mind, special attention has been given to the food supply of Brooklyn during the past summer. My experience leads me to the conclusion that a very much greater proportion of diseased animals is slaughtered and the meat of the same put upon the market than is commonly believed. During the past summer, inspectors have been stationed at the slaughter houses with reference to this detection of impure meat, and they have thus been enabled to discover and condemn meat which would otherwise have found its way into the market. In one of our large cities, at a not very distant date, scores of carcasses of immature veal were exposed for sale in the public market, and it was the opinion of men competent to decide that some of these calves had come into the world only a day or two before, and that others had been born dead. The effect of such meat upon the health of those unfortunate enough to eat it can readily be surmised. And here let me say that, in my judgment, no inspection of meat can be of much value unless it occur at the slaughter-house, and before the viscera have been removed. Many cases of tuberculosis and of contagious pleuro-pneumonia have been detected by the inspectors who were able to interrogate the lungs before they were removed from the animal, which would have passed a most rigid inspection had an examination of the carcass alone been relied upon. No statistics, so far as I am aware, have ever been collected in this country of the amount of tuberculosis in our cattle. In the abbatoir of Munich in 1875, out of 55,882 head of cattle, 704 were tuberculous. It has been estimated that nearly six per thousand of the cattle of Bavaria are thus affected; and Fleming assumes that five per cent. of the cattle of Great Britain are affected with tuberculosis. The milk supply of large cities is also one to be specially kept under observation during epidemics; and this not only because there is danger of milk from diseased cows finding its way into the market, but because a large amount of milk furnished in our cities is adulterated with more or less water.

This water is, as a rule, from the ordinary water supply of the farm or of the stable, and is liable to be impure, and, just as infected water may communicate disease to those who drink it, just so may milk, adulterated with infected water, be the means of conveying disease. The adulteration of milk with water, therefore, is to be looked upon as something more than an ordinary adulteration affecting the pocket of the consumer, and something more even than one depriving the growing child, depending upon it for its support, of a large portion of its nutrition; it may be a means of conveying cholera as it has time and again communicated typhoid fever. Courts, therefore, when complaints are made before them of selling milk adulterated with water, should have their attention specially directed to this danger, and asked to impose the heaviest penalties which the law allows.

Attention to the sanitary condition of cow stables is also very important. If the urine and excrement are permitted to accumulate and putrefy, either within the stable or its immediate vicinity, the milk will almost certainly be affected. Every one is familiar with the remarkable absorptive power of milk, and the facility with which it undergoes decomposition. The atmosphere of a filthy cow stable, laden as it is with putrefactive germs, cannot but act deleteriously upon the milk exposed therein.

To further carry out the object of protecting the milk supply, a critical examination by qualified veterinarians has been conducted, for the past six months, into the condition of the milch cows of the city, and measures have been put into execution with reference to the eradication of tuberculosis and contagious pleuro-pneumonia, believing that milk from animals thus affected is highly injurious, and that the continuance of such animals in a herd casts suspicion on all the milk produced. Arrangements are now being perfected for the establishment of a quarantine, to which will be sent all affected cows, where they will be kept under the supervision of the health authorities until it is deemed proper for them to return to the herds from which they came.

It seems unnecessary to call attention to the necessity for special effort in guarding the public against immature or unripe vegetables and fruit in times of cholera; this is a work which will suggest itself to every sanitary officer, and therefore needs but an allusion here.

QUARANTINE.

Brooklyn, in common with other cities, must depend in great measure for its protection from cholera upon the Quarantine authorities. The present arrangement by which our water front is constantly patrolled by the police renders it almost impossible for a vessel from an infected locality to come to our docks and unload its cargo without first obtaining the permit of the Health Officer of the Port. It is of course among the possibilities that infected material may reach the city in trunks or packages which have found their way into our country through some other port than the Port of New York; but I feel that if we can exclude from Brooklyn all cases and infected goods that find their way by ship to the Port of New York, we will be able to keep the disease from obtaining a foothold in our city. The people of Brooklyn fully appreciate the difficulties under which the present Health Officer, Dr. William M. Smith, labors, and take this opportunity to express that appreciation and to commend his watchfulness and painstaking care;

and we assure him that any and every effort which he may make, however arbitrary, with the object of protecting the two million residents of New York and Brooklyn, will be sustained.

We would also importune the Legislature of the State of New York to withhold no means needed to uphold the Health Officer in perfecting the Quarantine Station and its appliances in the Harbor of New York.

I beg leave to submit to the Conference for its consideration and ratification, if approved, the following propositions :

First.—That all surface wells should be closed at the earliest possible moment, and that great care should be taken that the water supply of all cities, towns and villages shall be of undoubted purity.

Second.—That all privy vaults should be abolished wherever water-closets can be supplied, and that wherever the existence of such vaults is necessary that they should be rendered water-tight in such a manner as to prevent the saturation, not only of the ground surrounding them, but also of the materials of which they are built, and that the contents of such vaults should be kept constantly disinfected, and removed to a proper place at frequent intervals.

Third.—That all stagnant ponds should be disinfected, and when possible the water removed by drainage or pumping, and the further accumulation prevented by filling with fresh earth or other material free from garbage or other filth.

Fourth.—That great care should be exercised to keep at all times clear and free from obstruction all sewers into which passes the refuse from dwellings, factories and other buildings, and that such examinations should be made as will detect imperfect plumbing in all buildings and the defects immediately corrected.

Fifth.—That extraordinary care should be exercised in reference to all tenement houses, lodging-houses, and in general all places where large numbers of human beings congregate, that no accumulation of garbage or other filth be permitted in cellars or yards, and that frequent and thorough cleaning and whitewashing of such structures be required; and that householders should frequently and thoroughly examine their yards, cellars, closets and other out of the way places, to see that no filth of any kind has been deposited there.

Sixth.—That the food supply be vigorously watched to exclude from the market all unwholesome meat; all milk adulterated or from diseased animals; and all unripe fruits and vegetables; and that cow-stables be kept, at all times, clean, well whitewashed and free from all excremental accumulations.

Seventh.—That all garbage, kitchen and household refuse should be promptly removed from dwellings, stores and other buildings to a proper place where it may be destroyed by fire or otherwise disposed of in such manner as to occasion no nuisance.

Eighth.—That such material should never be used in the filling of lots or disposed of by throwing the same in streets or vacant property where it may decompose and exhale offensive and deleterious gases.

Ninth.—That in view of the practical results reported by that eminent sanitarian, Edwin Chadwick, Esq., C. B., the authorities of all public institutions, and individuals as well, have their attention drawn to the great importance of the personal cleanliness of the persons committed to their charge, as one of the most efficient means of warding off an attack of cholera, and of reducing its force when once it has appeared.

Tenth.—That all authorities of states, cities or villages be urged to adopt measures which will result in the amelioration of all conditions such as have been referred to in the foregoing propositions, with the warning that in the opinion of this conference such conditions, if permitted to continue, will greatly promote the spread of cholera when it comes, and with the assurance that if requisite measures are promptly taken to remove them, the disease will be less likely to attack a community so prepared, and, if attacked, such a community will be better able to cope with the disease and to reduce its ravages to a minimum.

CONCLUSION.

In concluding this report permit me to direct attention to the importance of this conference which is now assembled in convention. In my judgment it is the most important, from a sanitary standpoint, which has ever convened in the United States, and to its deliberations the attention of the whole country is directed. From it will be expected, in concise and available form, recommendations by which communities may prepare themselves for the threatened invasion, and methods for its control when once it has appeared. It behooves us, therefore, to proceed with great caution, and to consider carefully and thoroughly all suggestions which may be made, and if need be to assemble again at an early date to adopt what in the wisdom of this conference may seem best, so that when our labors are completed we may issue to the public such a plan as shall meet its wants and be recognized by medical and other men of science as having its foundation in the most advanced knowledge now attainable, and competent to meet the ends for which it was prepared.

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RECOMMENDATION.

GARBAGE.

We have reached a time when in my judgment a radical change should be made in the collection and disposal of the city's garbage. We have had no adequate system since the year 1874, at which time a great advance was made over anything that had previously existed ; the plan then employed was excellent, and, had it been continued, would soon have reached a condition of complete perfection, so far as the collection alone is concerned. The methods since that time have been without system, and the best that can be said of them is that they have been inexpensive. The amount appropriated annually for this important branch of the city's service has been about $10,000 ; a sum which is very far from what it must be if the demands of health and comfort are to be met. The garbage, after collection, has been removed to the neighboring towns and there fed to pigs, and to-day it is estimated that there are three thousand of these animals on our borders. I cannot but feel that we are indirectly imposing upon our neighbors nuisances which we would not for one moment tolerate within our own limits, and if I am not mistaken, the day is not far distant when our garbage will be prohibited from entering these towns. When this occurs there will be no inducement to those who now collect the garbage in our city, and we will have to provide means for its disposal either by fire or by its removal to sea.

Inasmuch as constant complaints are made of the garbage of New York which is now deposited at sea, for the reason that it is carried by tide and wind to Coney Island and other sea-side summer resorts, my own preference is for a plan which looks toward the destruction of the garbage by fire. This whole subject is one which should receive the immediate attention of the proper authorities, and a plan should be prepared so that the next Board of Estimate can make provision for a garbage service which will be a credit to the city.

SLAUGHTER HOUSES.

In the last report of this Department to your Honor, attention was called to the benefits which would result in a removal of the slaughter houses to the water front, where the entire work done in sixteen premises scattered over the city might be done in a single abbattoir. The statement then made was as follows:

"Another matter of sufficient importance to require the attention of the municipal authorities is the location of slaughter houses in sections of the city which are either densely populated or are rapidly becoming so. The necessity for the discontinuance of some of the present slaughtering places has been long felt by this Department, and in past years many fruitless efforts have been made to accomplish their removal to the water front. The nuisances incidental to their very existence, such as the driving of animals through the streets, endangering human life and defiling the roadway and oftentimes the sidewalk, together with their bellowing and bleating, when they have reached the place of destination and are herded preparatory to slaughter, render it essential for the welfare and comfort of the community that the present methods should be discontinued at the earliest practicable date. Some faint idea of the evils possible under the present arrangement may be obtained by remembering that the number of animals slaughtered in the city during the twelve months was 187,385, most of which had been driven through the streets of the city.

"It is with this object in view that a public market with an abbattoir attached, meets with the hearty endorsement of this Department."

During the past year many things have occurred to greatly strengthen the conviction then expressed. On December 3, George Wunderland, eight years of age, residing with his parents at 139 Meserole street, was run against and knocked down at the corner of Johnson avenue and Humboldt street by a steer, which broke loose from a drove of cattle which were being driven to one of the Johnson avenue slaughter houses;

the boy received contused wounds of the forehead, and after being attended by Ambulance-Surgeon Sayles, was taken home. From here the animal ran through the Sixth Precinct and through the Fifth Sub-Precinct to the Wallabout Canal, where he jumped on a boat, and was subsequently killed by the police. Such accidents as these are continually occurring, and must be expected, if the slaughter-houses are to continue in their present location. Another advantage which would accrue, by the construction of an abbattoir, and a far more important one, is the greater opportunity which would be given for a thorough inspection of every animal slaughtered.

I have elsewhere in this report called attention to the large number of diseased animals which find their way to the slaughter-houses, and to the amount of meat which a close watch has enabled us to detect as unfit for human consumption and to condemn. If the slaughter-houses were at one place, instead of separated, I have no doubt the amount condemned would have been much greater.

In concluding this report permit me to reiterate what it has been my privilege to state in each of my past annual reports, that the cordial sympathy and co-operation which have constantly been shown by your Honor in the work of this Department, have greatly lightened the labors of myself and my associates; and to assure you that we have always felt that you were desirous of doing every thing possible to make Brooklyn a city famed for health, as well as for security of life and property, and purity of administration.

Respectfully,

J. H. RAYMOND, M. D.,

Commissioner.

APPENDIX A.

REPORT OF

CONTAGIOUS DISEASES IN BROOKLYN,

1877-1884.

TABLE I.—SMALL POX—1877.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1877.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First									1																1	
Second																										
Third																										
Fourth																										
Fifth	1		1				2																		4	
Sixth			4		2				1				2												9	
Seventh			2	1	*20		8																		30	1
Eighth			1																						1	
Ninth											1														1	
Tenth									1		1														2	
Eleventh																										
Twelfth			2		1				1																4	
Thirteenth																										
Fourteenth	1																								1	
Fifteenth																										
Sixteenth											1	1													1	1
Seventeenth																										
Eighteenth																										
Nineteenth							7																		7	
Twentieth							1																		1	
Twenty-first							3																		3	
Twenty-second	1		1				4				5														11	
Twenty-third							1																		1	
Twenty-fourth									2		5	1													7	1
Twenty-fifth											1														1	
Total	3	...	11	1	23	...	26	...	6	...	14	2	2	...	...	...	...	...	...	...	...	...	...	...	85	3

*18 of these cases were in Convent of Sisters of Mercy.

TABLE II.—SMALLPOX—1877.

Cases and Deaths, and patients sent to Hospital each month.

MONTHS.	Cases.	Deaths.	Sent to Hospital.
January	3		
February	11	1	6
March	23		20
April	26		20
May	6		3
June	14	2	10
July	2		2
August			
September			
October			
November			
December			
Total	85	3	61

TABLE III.—SMALLPOX-1877.

Cases and Deaths, and patients sent to Hospital, in each Ward.

WARDS.	Cases.	Deaths.	Sent to Hospital.
First	1		1
Second			
Third			
Fourth			
Fifth	4		1
Sixth	9		7
Seventh	30	1	24
Eighth	1		
Ninth	1		
Tenth	2		1
Eleventh			
Twelfth	4		3
Thirteenth			
Fourteenth	1		
Fifteenth			
Sixteenth	1	1	
Seventeenth			
Eighteenth			
Nineteenth	7		7
Twentieth	1		
Twenty-first	3		1
Twenty-second	11		9
Twenty-third	1		1
Twenty-fourth	7	1	6
Twenty-fifth	1		
Total	85	3	61

TABLE IV.—SMALLPOX—1877.

Cases and Deaths by Ages and Sexes.

	Males.	Females.	Under 1 Year.	Under 2 Years.	Under 3 Years.	Under 4 Years.	Under 5 Years.	From 5 to 10 Years.	From 10 to 15 Years.	From 15 to 20 Years.	From 20 to 40 Years.	From 40 to 60 Years.	Over 60 Years.
Cases...........	33	52	5	3	5	7	7	25	13	4	12	3	1
Deaths..........	1	2	1	....	....	....	....	1	....	....	1	....	....

TABLE V.—DIPHTHERIA, 1877.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total, 1877	
	Cases.	Deaths.	Cases.	Deaths.	Cases	Deaths.	Cases.	Deaths	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	6	1	2	...	5	...	9	2	2	...	4	1	2	...	6	...	4	..	4	1	12	4	11	...	67	9
Second	2	...	1	...	1	...	3	1	.	...	5	2	...	...	2	2	...	...	3	2	...	...	..	...	17	7
Third	3	..	11	2	5	...	5	1	5	1	10	3	3	2	1	1	3	1	4	1	5	...	13	1	68	13
Fourth	1	1	...	...	1	...	4	..	2	...	...	...	...	...	...	...	...	...	2	1	1	1	4	..	15	3
Fifth	8	3	5	1	2	1	3	2	3	1	2	2	2	...	1	...	1	1	5	2	2	...	5	1	39	14
Sixth	30	8	20	3	26	6	14	1	11	3	14	1	6	1	8	...	9	1	12	4	15	1	8	1	173	30
Seventh	16	2	6	1	10	3	16	...	15	1	14	1	6	2	8	2	12	4	17	8	11	3	20	3	151	30
Eighth	5	1	2	1	1	...	2	..	..	...	5	1	4	2	6	1	1	...	4	...	7	...	13	...	50	6
Ninth	10	4	6	1	10	2	21	4	9	3	10	2	13	5	9	5	7	...	5	3	2	1	8	...	110	30
Tenth	6	1	14	6	14	2	21	2	7	1	7	2	4	...	4	1	4	1	5	3	13	3	7	1	106	23
Eleventh	10	3	5	1	4	...	11	1	6	..	5	1	2	...	4	2	7	3	3	1	8	2	14	2	79	16
Twelfth	13	5	6	4	3	...	7	1	5	1	1	1	2	...	2	1	6	5	8	2	3	..	3	1	59	21
Thirteenth	4	1	9	4	11	2	5	...	5	1	8	3	4	3	3	...	3	...	9	3	12	2	18	1	91	20
Fourteenth	4	4	5	...	7	3	4	2	3	1	7	5	8	5	11	9	3	2	14	8	11	1	12	3	89	43
Fifteenth	3	1	5	1	4	2	4	...	5	1	4	3	3	...	4	2	10	5	12	4	13	9	9	5	76	33
Sixteenth	8	3	6	4	7	2	13	3	16	6	15	6	9	2	7	6	9	4	10	4	20	7	17	5	137	52
Seventeenth	16	3	10	1	5	2	18	..	5	...	6	1	2	...	5	1	7	2	9	1	13	5	10	5	106	21
Eighteenth	5	1	16	8	5	4	8	...	4	...	8	2	3	1	2	2	6	...	6	3	5	2	12	6	80	29
Nineteenth	8	2	7	...	11	2	8	1	8	1	3	1	2	...	4	1	4	1	6	2	12	3	21	4	94	18
Twentieth	7	2	5	1	10	1	11	2	7	3	5	1	5	1	3	...	4	1	4	2	9	...	7	. .	77	14
Twenty-first	22	7	10	6	13	2	15	..	14	4	13	4	13	6	3	1	9	3	17	9	15	1	9	3	153	46
Twenty-second	12	4	7	..	12	2	4	1	14	4	11	3	2	...	3	1	...	...	8	1	7	4	12	...	92	20
Twenty-third	6	. .	7	1	7	3	7	...	6	1	17	9	16	5	...	...	3	1	14	6	15	3	12	1	110	30
Twenty fourth	7	2	..	...	7	1	1	...	1	...	4	...	4	1	8	2	2	1	4	1	7	1	...	...	45	9
Twenty-fifth	5	1	11	1	21	3	8	...	7	1	19	6	32	14	24	7	21	6	20	8	16	7	12	2	196	56
Total	217	60	176	47	202	43	222	24	160	34	197	61	147	50	128	47	135	42	205	80	234	60	257	45	2,280	593

TABLE VI.—DIPHTHERIA—1877.

Cases and Deaths by Ages and Sexes.

	Males.	Females.	Under 1 year.	Under 2 years	Under 3 years.	Under 4 years.	Under 5 years.	From 5 to 10 years	From 10 to 15 years.	From 15 to 20 years.	From 20 to 40 years.	From 40 to 60 years.	Over 60 years.
Cases	1094	1186	84	186	219	260	257	675	205	107	245	39	3
Deaths..........	300	293	41	90	88	99	63	167	24	6	11	3	1

TABLE VII —SCARLET FEVER, 1877.

Cases and Deaths (by Months,) in each Ward.

WARDS.	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total, 1877.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	5	1	8	...	12	2	7	...	4	1	3	...	2	1	...	..	1	1	5	...	3	...	12	2	62	8
Second	1	...	...	..	3	...	6	1	6	3	10	5	7	5	2	2	...	...	2	..	1	1	2	...	40	17
Third	2	...	10	2	10	...	10	...	3	...	3	...	1	..	3	1	...	...	4	2	3	1	17	2	66	8
Fourth	10	1	2	...	2	...	4	...	10	3	7	4	6	1	1	...	...	...	4	...	1	...	4	...	51	9
Fifth	4	1	8	5	3	2	9	1	9	3	11	6	1	...	5	3	6	2	7	5	1	...	7	3	71	31
Sixth	31	5	20	3	29	1	37	1	24	4	14	1	16	1	18	1	14	1	28	2	11	3	33	2	275	25
Seventh	14	4	14	5	16	1	16	2	12	2	12	3	9	4	1	1	7	4	2	1	2	...	8	2	113	29
Eighth	2	1	4	1	3	1	2	...	5	2	15	4	18	6	19	6	15	4	14	3	6	1	15	1	118	30
Ninth	11	...	3	1	6	2	12	...	11	3	11	3	3	1	4	1	2	...	1	1	6	2	5	1	75	15
Tenth	6	2	19	1	24	2	21	..	12	...	12	4	5	2	9	2	4	...	13	4	15	1	22	7	162	25
Eleventh	6	...	9	1	19	2	15	...	21	5	17	5	5	2	3	3	6	1	6	3	1	...	13	...	121	22
Twelfth	31	14	26	8	16	4	13	3	18	4	9	2	15	6	7	2	10	5	8	3	3	1	5	3	162	55
Thirteenth	4	2	8	...	17	2	9	.	8	2	8	2	19	3	6	1	3	...	11	2	8	2	28	4	129	21
Fourteenth	1	...	8	3	6	1	10	2	11	2	14	6	29	9	8	3	4	2	7	3	10	3	8	4	116	38
Fifteenth	2	1	2	1	6	...	12	2	12	1	25	9	13	5	7	3	3	...	4	2	9	3	4	2	99	29
Sixteenth	11	2	5	2	17	3	27	2	36	10	24	5	7	2	13	7	5	2	5	1	17	2	11	1	176	39
Seventeenth	8	1	18	6	32	8	22	2	39	8	16	3	12	1	3	1	7	1	8	...	8	1	9	3	177	35
Eighteenth	5	1	3	1	7	...	7	1	8	2	16	4	12	3	6	1	6	3	7	4	11	5	2	1	90	26
Nineteenth	4	...	10	2	21	6	10	3	15	3	8	3	7	...	9	1	8	...	11	2	15	4	23	2	141	26
Twentieth	4	...	6	2	5	1	8	1	11	...	1	1	2	...	...	...	2	...	3	1	1	..	2	...	45	6
Twenty-first	4	...	8	1	28	2	27	1	26	3	20	6	16	2	11	1	14	4	11	4	18	3	36	13	219	39
Twenty-second	15	...	8	3	14	1	8	...	11	1	16	2	12	3	5	3	3	...	6	3	7	3	12	1	117	20
Twenty-third	9	1	6	...	17	4	10	1	8	1	7	1	5	1	1	...	...	...	4	2	2	1	4	2	73	14
Twenty-fourth	*49	2	11	4	6	1	..	. .	1	...	...	...	...	...	3	1	...	...	...	...	2	...	2	..	74	8
Twenty-fifth	23	8	18	2	35	5	26	1	23	8	8	2	6	...	3	...	1	1	5	...	3	1	1	...	153	28
Total	263	47	234	54	354	51	328	24	344	71	288	79	228	58	147	44	121	31	176	48	164	38	285	57	2,930	604

* 41 of these cases were in the Roman Catholic Orphan Asylum, Albany Avenue.

TABLE VIII.—SCARLET FEVER—1877.

Cases and Deaths by Ages and Sexes.

	Males.	Females.	Under 1 year.	Under 2 years.	Under 3 years.	Under 4 years	Under 5 years.	From 5 to 10 years.	From 10 to 15 years.	From 15 to 20 years.	From 20 to 40 years.	From 40 to 60 years.	Over 60 years.	Not reported.
Cases......	1509	1421	67	226	348	397	382	1642	219	64	74	4	4	3
Deaths.....	319	285	17	73	108	95	80	194	16	9	11	1	....	....

TABLE IX.—TYPHOID FEVER—1877.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1877.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths
First	1	1	...	...	...		...	...	1	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	4	1
Second	...	...	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	2	..
Third	...	...	2	1	...		1	...	...	...	...	...	...	...	2	1	2	...	1	...	2	...	...	...	10	2
Fourth	...	...	...	...	...		...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	1	1
Fifth	1	1	...	...	1	1	...	...	1	1	...	...	...	...	2	1	3	2	1	1	...	...	2	...	11	7
Sixth	...	...	2	1	1	...	...	...	...	...	...	...	1	1	3	1	2	...	3	1	2	1	1	...	15	5
Seventh	1	...	...	...	3	3	...	...	...	...	...	...	...	...	3	1	2	...	4	1	1	1	...	...	14	6
Eighth	...	...	...	...	...	...	1	...	1	1	...	...	1	...	...	...	...	...	3	2	...	...	...	...	6	3
Ninth	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	3	...
Tenth	...	...	...	...	...	...	2	...	...	...	...	...	1	1	...	...	2	...	...	...	1	...	...	...	6	1
Eleventh	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	1	2	1	...	...	...	...	5	2
Twelfth	1	1	2	2	...	...	...	...	1	...	...	...	...	...	...	...	...	...	4	1	...	...	...	...	8	4
Thirteenth	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	2	...	...	...	1	...	...	...	4	1
Fourteenth	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	5	1	...	...	1	...	...	...	8	1
Fifteenth	2	...	...	...	1	...	1	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	6	....
Sixteenth	2	...	...	...	1	...	1	...	...	...	...	...	1	...	2	...	1	...	...	...	...	...	1	...	9	....
Seventeenth	...	...	2	2		...	...	...	...	...	...	...	1	...	...	...	1	1	4	...	...	...	...	...	8	3
Eighteenth	...	...	...	...		...	2	...	...	...	2	...	...	...	2	1	2	1	1	1	1	...	...	...	10	3
Nineteenth	...	...	...	...		...	...	...	1	...	...	...	1	1	1	1	...	...	...	...	...	...	1	1	5	3
Twentieth	1	...	...	...		...	...	...	2	...	...	...	...	...	...	...	1	1	3	2	...	...	1	...	8	3
Twenty-first	1	...	...	...		...	1	1	...		...	...	...	...	2	1	1		...	...	2	1	...	...	7	3
Twenty-second	...	...	...	...		...	...	...	...		1	1	...	...	1	1	1	...	2	1	...	...	...	...	6	3
Twenty-third	1	...	1	...		...	...	...	..		4	3	..	...	2	1	3	1	...	...	...	..	...	...	11	5
Twenty-fourth	...	...	...	...		...	...	...	...		...	...	...	...	1	...	1	...	...	...	...	...	...	...	2	....
Twenty-fifth	...	...	...	...	1	...	...	...	1		1	...	...	...	2	1	4	1	...	...	2	2	...	...	11	4
Total	11	3	9	6	10	5	11	1	9	2	9	4	6	3	24	10	39	10	31	11	14	5	7	1	180	61

TABLE X.—TYPHOID FEVER—1877.

Cases and Deaths by Ages and Sexes.

	Males.	Females.	Under 1 year.	Under 2 years.	Under 3 years.	Under 4 years.	Under 5 years.	From 5 to 10 years.	From 10 to 15 years.	From 15 to 20 years.	From 20 to 40 years.	From 40 to 60 years.	Over 60 years.
Cases	96	84	1	2	1	1	5	16	24	32	69	20	9
Deaths	36	25	1	1	....	....	1	4	6	9	22	10	7

TABLE XI.—CEREBRO-SPINAL MENINGITIS, 1877.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1877.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases	Deaths.	Cases.	Deaths.
First	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1
Second	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Third	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fourth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fifth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sixth	...	...	1	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	1
Seventh	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1
Eighth	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1
Ninth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tenth	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Eleventh	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Twelfth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Thirteenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fourteenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fifteenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sixteenth	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1
Seventeenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Eighteenth	1	...	...	...	...	...	1	1	...	...	2	1	...	...	...	...	...	...	...	...	...	...	...	...	4	2
Nineteenth	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	2	2
Twentieth	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1
Twenty-first	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Twenty-second	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Twenty-third	...	...	...	...	...	...	1	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	2	1
Twenty-fourth	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	2	1
Twenty-fifth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total	4	3	2	1	1	1	3	3	3	2	4	1	...	...	...	...	1	1	...	...	1	...	...	...	19	12

TABLE XII.—CEREBRO-SPINAL MENINGITIS—1877.

Cases and Deaths by Ages and Sexes.

	Males.	Females.	Under 1 year.	Under 2 years.	Under 3 years.	Under 4 years.	Under 5 years	From 5 to 10 years.	From 10 to 15 years.	From 15 to 20 years.	From 20 to 40 years.	From 40 to 60 years.	Over 60 years	Not reported.
Cases.......	10	8	1	2	....	..	....	6	4	....	4	....	....	1
Deaths	8	3	1	2	....	....	....	5	1	...	2	...	....	1

TABLE XIII.—ALL CONTAGIOUS DISEASES—1877.

Cases and Deaths, by Months.

Wards.	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sep.		Oct.		Nov.		Dec.		Total for 1877.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	12	3	10	...	17	2	16	2	8	1	7	1	4	1	6	...	7	1	9	1	15	4	23	2	134	18
Second	3	...	1	...	4	...	9	2	6	3	15	7	7	5	4	4	...	...	7	2	1	1	2	...	59	24
Third	5	...	23	5	15	...	16	1	8	1	13	3	4	2	6	3	5	1	9	3	10	1	30	3	144	23
Fourth	11	2	2	...	3	...	8	...	12	3	7	4	6	1	1	...	1	1	6	1	2	1	8	...	67	13
Fifth	14	5	14	6	6	4	14	3	13	5	13	8	3	...	8	4	10	5	13	8	3	...	14	4	125	52
Sixth	61	13	46	7	58	7	51	2	36	7	28	2	25	3	29	2	25	2	43	7	28	5	42	3	472	60
Seventh	31	6	22	7	49	7	40	2	27	3	26	4	15	6	12	4	21	8	23	10	14	4	28	5	308	66
Eighth	7	2	7	2	4	1	5	...	6	3	20	5	23	8	25	7	16	4	21	5	13	1	28	1	175	39
Ninth	21	4	9	2	16	4	34	4	20	6	22	5	16	6	13	6	9	...	7	4	9	3	13	1	189	45
Tenth	12	3	33	7	38	4	44	2	20	1	20	6	10	3	13	3	10	1	18	7	29	4	29	8	276	49
Eleventh	16	3	14	2	23	2	26	1	27	5	22	6	7	2	7	5	16	5	11	5	9	2	27	2	205	40
Twelfth	46	20	36	14	20	4	20	4	25	5	10	3	17	6	9	3	16	10	20	6	6	1	8	4	233	80
Thirteenth	8	3	17	4	29	5	14	...	13	3	16	5	23	6	9	1	8	...	20	5	21	4	46	6	224	42
Fourteenth	6	4	13	3	13	4	15	4	11	3	21	11	37	14	20	12	12	5	21	11	22	4	20	7	214	82
Fifteenth	7	2	7	2	11	2	17	2	21	2	29	12	16	5	11	5	13	5	16	6	22	12	13	7	181	62
Sixteenth	22	5	11	6	25	5	41	5	52	16	42	12	17	4	22	13	15	6	15	5	37	9	29	6	328	92
Seventeenth	24	4	30	9	37	10	40	2	44	8	22	4	15	1	8	2	15	4	21	1	21	6	19	8	296	59
Eighteenth	10	2	19	9	12	4	17	1	12	2	27	6	15	4	10	4	14	4	14	8	17	7	14	7	181	58
Nineteenth	12	2	17	2	33	8	25	4	24	4	11	4	10	1	14	3	12	1	17	4	27	7	45	7	247	47
Twentieth	12	2	11	3	15	2	20	3	20	3	7	2	7	1	3	...	7	2	10	5	10	...	10	...	131	23
Twenty-first	27	7	18	7	41	4	46	2	40	7	33	10	29	8	16	3	24	7	28	13	35	5	45	16	382	89
Twenty-second	28	4	16	3	26	3	16	1	25	5	33	6	14	3	9	5	4	..	16	5	14	7	25	1	226	43
Twenty-Third	16	1	14	1	24	7	18	1	14	2	28	13	21	6	3	1	6	2	18	8	17	4	16	1	195	49
Twenty-fourth	56	4	11	4	13	2	1	...	4	...	9	1	4	1	12	3	3	1	4	1	9	1	2	...	128	18
Twenty-fifth	28	9	29	3	57	8	34	1	31	9	30	8	38	14	29	8	26	8	25	8	21	10	13	2	361	88
Total	495	110	430	108	589	99	587	49	519	107	511	148	383	111	299	101	295	83	412	139	412	103	549	103	5481	1261

SMALLPOX—1878.

One case only occurred during this year. The patient was a male, aged thirty-one years, resided in the Twelfth Ward, was not removed to the hospital, and recovered.

This statement takes the place of regular tables XIV, XV, XVI, XVII.

YELLOW FEVER—1878.

One case occurred during this year. The patient, a Quarantine lighterman, was a male, aged thirty-six years, resided in the Twelfth Ward, was removed to Quarantine, where he died.

TABLE XVIII.—DIPHTHERIA—1878.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		March.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1878.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	11	...	9	1	8	...	5	1	5	2	1	...	1	1	...	...	1	...	2	1	3	...	5	...	51	6
Second	2	...	1	...	2	1	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	7	1
Third	8	...	2	...	9	4	1	...	1	...	5	...	...	...	3	...	3	1	6	1	5	1	8	4	51	11
Fourth	4	...	2	...	1	...	...	...	3	1	...	...	3	...	2	...	1	1	1	...	2	1	2	...	21	3
Fifth	2	1	5	2	2	1	2	...	3	1	...	...	1	1	...	...	1	1	...	...	6	3	1	1	23	11
Sixth	14	2	13	1	6	2	8	...	3	2	3	1	4	3	5	2	3	2	11	2	5	1	4	...	79	18
Seventh	6	...	9	1	7	2	7	3	11	2	8	3	4	1	...	...	6	3	11	7	12	7	15	4	96	33
Eighth	14	4	8	2	5	...	7	1	1	...	1	...	...	...	...	...	2	...	2	..	1	...	2	...	43	7
Ninth	9	1	10	1	3	...	6	...	5	3	...	...	1	...	2	1	1	...	1	...	...	...	3	...	41	6
Tenth	12	2	7	2	16	3	14	...	1	...	...	...	2	2	5	2	3	2	2	1	14	6	8	2	84	22
Eleventh	13	2	7	...	6	3	1	...	4	...	6	2	...	...	4	2	1	...	2	1	3	2	5	2	52	14
Twelfth	1	1	4	2	3	...	3	...	1	1	1	...	2	...	3	3	4	1	1	1	1	...	3	2	27	11
Thirteenth	10	5	11	...	17	4	9	3	9	2	5	1	...	...	...	...	6	2	21	5	14	4	13	4	115	30
Fourteenth	7	5	4	1	8	2	2	2	3	2	3	1	7	...	13	11	36	19	21	9	24	11	7	4	135	67
Fifteenth	6	1	10	1	10	2	4	2	4	...	4	...	1	1	1	...	5	2	12	9	5	4	11	4	73	26
Sixteenth	11	4	6	3	13	2	6	...	10	4	4	2	1	...	7	4	19	13	20	15	7	4	24	14	128	65
Seventeenth	13	6	8	..	7	2	6	1	2	1	5	2	2	1	4	1	4	1	32	8	20	8	12	1	115	32
Eighteenth	10	2	7	5	8	1	8	2	6	...	3	2	5	2	9	4	7	4	6	1	12	7	7	5	88	35
Nineteenth	21	6	7	2	13	2	12	7	7	1	2	...	1	...	1	...	4	2	7	3	9	...	12	4	96	27
Twentieth	12	...	5	1	4	..	11	2	6	...	4	...	4	1	2	...	4	1	1	...	8	3	4	1	65	9
Twenty-first	16	6	7	3	3	...	4	2	3	2	7	1	2	...	6	1	12	3	9	2	17	7	14	5	100	32
Twenty-second	23	5	8	1	11	3	7	2	11	...	2	1	3	1	...	...	1	1	7	1	6	...	1	1	80	16
Twenty-third	9	1	9	1	14	3	9	1	11	2	9	3	4	...	2	...	2	1	4	1	11	1	8	1	92	15
Twenty-fourth	1	...	1	...	...	...	..	...	4	1	1	...	...	...	2	1	...	...	2	1	1	...	..	...	12	3
Twenty-fifth	13	1	13	1	3	1	6	1	2	...	4	...	2	...	1	...	1	...	9	2	7	1	9	2	70	9
Total	248	55	173	31	179	38	138	30	117	27	78	19	50	14	72	32	127	60	191	71	193	71	178	61	1744	509

TABLE XIX.—DIPHTHERIA—1878.

Cases and Deaths by Ages and Sexes.

	Males.	Females.	Under 1 year.	Under 2 years.	Under 3 years.	Under 4 years.	Under 5 years.	From 5 to 10 years.	From 10 to 15 years.	From 15 to 20 years.	From 20 to 40 years.	From 40 to 60 years.	Over 60 years.
Cases..........	807	937	52	146	156	200	149	536	187	75	200	42	1
Deaths..	257	252	26	86	82	82	56	145	22	2	4	4	....

TABLE XX.—SCARLET FEVER, 1878.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1878.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Dea'hs.	Cases.	Deaths.	Cases.	Deaths.	Cases	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	14	2	15	2	11	2	6	...	5	1	3	...	3	...	1	..	...	...	...	..	6	3	21	5	75	15
Second	6	1	3	1	2	...	1	...	1	...	...	...	...	...	...	..	...	...	...	...	2	1	4	2	19	5
Third	20	2	17	5	14	3	3	1	1	...	4	1	5	1	4	...	2	...	6	2	4	1	39	9	119	25
Fourth	7	...	6	1	5	1	6	...	5	...	3	..	...	...	...	...	...	...	9	1	2	...	7	...	50	3
Fifth	7	1	3	1	1	...	14	3	6	1	3	...	...	...	1	...	1	...	...	...	3	1	8	2	47	9
Sixth	17	1	12	3	23	4	15	4	6	2	2	1	2	1	8	1	11	2	16	8	16	3	34	11	162	41
Seventh	16	...	14	3	13	2	17	4	13	3	5	1	1	...	3	...	...	...	1	...	6	1	11	2	100	16
Eighth	9	1	8	2	14	3	16	4	13	4	6	...	1	...	1	...	...	...	2	1	2	..	2	1	74	16
Ninth	10	1	3	..	5	..	7	1	4	2	4	1	1	...	1	...	...	...	...	...	5	...	5	1	45	6
Tenth	14	1	13	4	18	3	13	1	7	2	2	...	4	2	...	...	3	...	4	...	12	4	11	3	101	20
Eleventh	21	2	16	3	7	...	10	...	7	1	1	...	7	...	1	...	...	...	2	...	5	2	11	1	88	9
Twelfth	4	..	8	1	11	...	1	1	1	...	4	...	1	...	...	...	...	...	...	...	2	1	4	...	46	3
Thirteenth	22	4	11	1	20	3	14	2	4	...	8	1	3	...	3	1	1	...	1	...	5	...	14	3	106	15
Fourteenth	7	3	6	1	4	...	6	...	2	1	4	...	7	...	3	...	6	...	1	...	...	...	1	...	47	5
Fifteenth	5	1	4	...	5	...	11	5	7	1	4	...	3	...	...	...	3	1	2	..	4	...	7	...	55	8
Sixteenth	11	3	16	5	15	2	15	4	9	4	7	1	9	1	4	...	...	..	...	...	12	3	14	3	112	26
Seventeenth	12	3	15	2	17	3	12	...	16	6	19	7	8	1	...	...	5	...	18	4	29	5	41	7	182	38
Eighteenth	3	...	8	2	5	1	11	1	8	1	1	.	1	...	3	...	1	...	...	...	4	..	9	2	54	7
Nineteenth	27	5	7	1	16	4	16	3	10	4	1	...	3	...	...	...	3	...	1	1	5	...	13	2	102	20
Twentieth	13	3	8	2	14	...	6	...	11	1	2	1	4	1	...	..	...	...	1	...	2	...	18	4	79	12
Twenty-first	32	7	20	4	20	4	11	3	26	5	19	4	4	...	...	...	6	3	5	1	1	1	1	1	145	33
Twenty-second	20	2	1	1	9	3	13	6	8	4	3	1	...	...	...	...	1	...	2	2	6	2	17	3	80	24
Twenty-third	5	2	7	1	7	1	4	...	1	...	4	...	...	...	...	...	...	...	1	...	7	1	2	1	38	6
Twenty-fourth	...	...	3	1	2	...	3	...	9	1	6	1	...	...	...	...	...	...	...	...	1	..	1	...	25	3
Twenty-fifth	4	1	5	...	11	...	2	...	2	1	2	1	...	...	...	...	...	...	...	...	1	...	10	5	37	8
Total	306	46	229	47	269	39	233	43	182	45	117	21	67	7	33	2	43	6	72	20	142	29	295	68	1,988	373

TABLE XXI.—SCARLET FEVER—1878.

Cases and Deaths by Ages and Sexes.

	Males.	Females.	Under 1 year.	Under 2 years.	Under 3 years.	Under 4 years.	Under 5 years.	From 5 to 10 years.	From 10 to 15 years.	From 15 to 20 years.	From 20 to 40 years.	From 40 to 60 years.	Over 60 years.
Cases........	1000	988	56	155	239	262	249	768	176	43	36	4	....
Deaths..........	191	182	12	50	69	56	46	121	12	3	2	2	...

TABLE XXII.—TYPHOID FEVER—1878.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1878.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Leaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First													1		1	1									2	1
Second																			1						1	
Third																	1		2	1			2		5	1
Fourth			1		2	1									1		2				1	1			7	2
Fifth													1				1								2	
Sixth			1														5	2	3	1	2				11	3
Seventh													1	1	2		1		2	1	1				7	2
Eighth							1				1														2	
Ninth									1	1					1	1	4	1	1		1				8	3
Tenth									2				1		3	3	1		3						10	3
Eleventh	1								1		4	2							2	1			1		9	3
Twelfth	1																1		2	1	1		2		7	1
Thirteenth									1				1		3	1					1	1			6	2
Fourteenth	1						1										1		1		1	1			5	1
Fifteenth	1	1	1								1	1	2	1	3								1	1	9	4
Sixteenth									1		1	1	1		4		2		2	1	1				12	2
Seventeenth	1	1					1	1					2		1		6	3			2	1	1	1	14	7
Eighteenth			1	1	1										1		3	1	2	1			1		9	3
Nineteenth	1														1		2	1							4	1
Twentieth											1	1			1	1	2	1							4	3
Twenty-first					1				1	1	2				2		1								7	1
Twenty-second	1				1								1	1			1		4	1	1		2	1	11	3
Twenty-third							1	1	1												1	1	1	1	4	3
Twenty fourth																										
Twenty-fifth															1	1	9	2	1		1				12	3
Total	7	2	4	1	5	1	4	2	8	2	10	5	11	3	25	8	43	11	26	8	14	5	11	4	168	52

TABLE XXIII.—TYPHOID FEVER—1878.

Cases and Deaths, by Ages and Sexes.

	Males.	Females.	Under 1 year.	Under 2 years.	Under 3 years.	Under 4 years.	Under 5 years.	From 5 to 10 years.	From 10 to 15 years.	From 15 to 20 years.	From 20 to 40 years.	From 40 to 60 years.	Over 60 years.
Cases...........	95	73	....	....	1	....	4	22	25	35	51	24	6
Deaths..........	28	24	....	....	1	....	2	5	6	8	14	11	5

TABLE XXIV.—CEREBRO SPINAL MENINGITIS—1878.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		March		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec		Total for 1878.	
	Cases.	Deaths.	Cases.	Deaths	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths	Cases.	Deaths.	Cases.	Deaths	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Second	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Third	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Fourth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	1	1
Fifth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sixth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Seventh	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	2	...	...	1	1	3	3
Eighth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ninth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tenth	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	2	2
Eleventh	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Twelfth	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Thirteenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fourteenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fifteenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sixteenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Seventeenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Eighteenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	1	1
Nineteenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Twentieth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	1	1
Twenty-first	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Twenty-second	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Twenty-third	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Twenty-fourth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Twenty-fifth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total	1	1	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	3	3	1	1	3	3	10	8

TABLE XXV.—CEREBRO-SPINAL MENINGITIS.

Cases and Deaths, by Ages and Sexes.

	Males.	Females.	Under 1 year.	Under 2 years.	Under 3 years.	Under 4 years.	Under 5 years.	From 5 to 10 years.	From 10 to 15 years.	From 15 to 20 years.	From 20 to 40 years.	From 40 to 60 years.	Over 60 years.
Cases	4	6	..	3	....	1	....	4	....		2	....	....
Deaths	3	5	....	2	....	1	....	3	...	....	2	....	....

TABLE XXVI.—ALL CONTAGIOUS DISEASES—1878.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1878.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	25	2	24	3	19	2	11	1	10	3	4	...	5	1	2	1	1	...	2	1	9	3	16	5	128	22
Second	8	1	4	1	4	1	1	...	2	...	...	...	...	...	...	...	...	...	2	...	2	1	4	2	27	6
Third	28	2	19	5	23	7	4	1	2	...	9	1	5	1	7	...	6	1	14	4	9	2	49	13	175	37
Fourth	11	...	9	1	8	2	6	...	8	1	3	...	3	...	3	...	3	1	10	1	5	2	9	...	78	8
Fifth	9	2	8	3	3	1	16	3	9	2	3	...	2	1	1	...	3	1	...	...	9	4	9	3	72	20
Sixth	31	3	26	4	29	6	23	4	9	4	5	2	6	4	13	3	19	6	30	11	23	4	38	11	252	62
Seventh	22	...	23	4	20	4	24	7	24	5	13	4	6	2	5	...	7	3	14	8	19	8	26	6	203	51
Eighth	23	5	16	4	19	3	23	5	14	4	8	...	1	...	1	...	2	...	4	1	3	...	4	1	119	23
Ninth	19	2	13	1	8	...	13	1	10	6	4	1	2	...	4	2	5	1	2	...	6	...	8	1	94	15
Tenth	26	3	20	6	34	6	27	1	10	2	2	...	7	4	8	5	7	2	9	1	26	10	19	5	195	45
Eleventh	35	4	23	3	13	3	11	...	12	1	11	4	7	...	5	2	1	...	6	2	8	4	17	3	149	26
Twelfth	6	1	12	3	14	..	4	1	2	1	5	...	3	...	3	3	5	1	3	2	4	1	9	2	80	15
Thirteenth	32	9	22	1	37	7	23	5	14	2	13	2	4	...	6	2	7	2	22	5	20	5	27	7	227	47
Fourteenth	15	8	10	2	12	2	8	2	5	3	7	1	14	...	16	11	43	19	23	9	25	12	8	4	187	73
Fifteenth	12	3	15	1	15	2	15	7	11	1	9	1	6	2	4	...	8	3	14	9	9	4	19	5	137	38
Sixteenth	22	7	22	8	28	4	21	4	20	8	12	4	11	1	15	4	21	13	22	16	20	7	38	17	252	93
Seventeenth	26	10	23	2	24	5	19	2	18	7	24	9	12	2	5	1	15	4	50	12	51	14	54	9	311	77
Eighteenth	13	2	16	8	14	2	19	3	14	1	4	2	6	2	13	4	11	5	8	2	16	7	17	7	151	45
Nineteenth	49	11	14	3	29	6	28	10	17	5	3	..	4	...	2	...	9	3	8	4	14	...	25	6	202	48
Twentieth	25	3	13	3	18	...	17	2	17	1	7	2	8	2	3	1	6	2	2	...	10	3	22	5	148	24
Twenty-first	48	13	27	7	24	4	15	5	30	8	28	5	6	...	8	1	19	6	14	3	18	8	16	7	252	66
Twenty-second	44	7	9	2	21	6	20	8	19	4	5	2	4	2	...	...	3	1	13	4	13	2	19	4	171	43
Twenty-third	14	3	16	2	21	4	14	2	13	2	13	3	4	..	2	...	2	1	5	1	19	3	11	3	134	24
Twenty-fourth	1	...	4	1	2	...	3	..	13	2	7	1	...	...	2	1	...	...	2	1	2	...	1	...	37	6
Twenty-fifth	17	2	18	1	14	1	8	1	4	1	6	1	2	...	2	1	10	2	10	2	9	1	19	7	119	20
Total	561	103	406	79	453	78	375	75	307	74	205	45	128	24	130	42	213	77	289	99	349	105	484	133	3,900	934

TABLE XXVII.—SMALL POX—1879.

Cases and Deaths, by Months, in each Ward.

Wards.	Jan.		Feb.		March.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1879.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Second	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	1	1
Third	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fourth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fifth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sixth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Seventh	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Eighth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ninth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Eleventh	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Twelfth	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Thirteenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fourteenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fifteenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sixteenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Seventeenth	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...
Eighteenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	1	1
Nineteenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Twentieth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Twenty-first	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Twenty-second	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Twenty-third	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Twenty-fourth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Twenty-fifth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total	1	...	...	...	...	...	...	...	...	...	3	...	...	...	...	...	...	...	1	1	...	...	1	1	6	2

TABLE XXVIII.—SMALLPOX—1879.

Cases and Deaths, and patients sent to Hospital each Month.

MONTHS.	Cases.	Deaths.	Sent to Hospital.
January	1	....	1
February	....	....	....
March	....	....	....
April	....	....	....
May	....	....	....
June	3	....	....
July	....	....	....
August	....	....	....
September	....	....	....
October	1	1*	1
November	....	....	....
December	1	1*	1
Total	6	2	3

* Died in hospital.

TABLE XXIX—SMALLPOX—1879.

Cases and Deaths, and patients sent to Hospital, in each Ward.

WARDS.	Cases.	Deaths.	Sent to Hospital.
First			
Second	1	1*	1
Third			
Fourth			
Fifth			
Sixth			
Seventh	1		
Eighth			
Ninth			
Tenth			
Eleventh			
Twelfth	1		1
Thirteenth			
Fourteenth			
Fifteenth			
Sixteenth			
Seventeenth	2		2
Eighteenth	1	1*	1
Nineteenth			
Twentieth			
Twenty-first			
Twenty-second			
Twenty-third			
Twenty-fourth			
Twenty-fifth			
Total	6	2	5

* Died in hospital.

TABLE XXX—SMALLPOX—1879.

Cases and Deaths, by Age and Sex.

	Males.	Females.	Under 1 Year.	Under 2 Years.	Under 3 Years.	Under 4 Years.	Under 5 Years.	From 5 to 10 Years.	From 10 to 15 Years.	From 15 to 20 Years.	From 20 to 40 Years.	From 40 to 60 Years.	Over 60 Years.
Cases..........	2	4	....	1	...	....	...	1	....	....	3	.. ..	1
Deaths..........	2	....	....	....	....	....	....	1	....	....	1	..	....

TABLE XXXI.—DIPHTHERIA—1879.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1879.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	9	...	1	...	3	..	2	1	...	...	1	...	1	1	3	1	3	3	2	2	7	2	4	2	36	12
Second	1	1	1	...	...	...	1	...	3	2	4	1	1	1	1	1	3	...	5	4	7	2	7	3	34	15
Third	8	1	11	3	7	1	4	1	1	...	1	1	1	1	...	...	1	1	7	2	7	1	16	5	64	17
Fourth	3	1	1	...	2	1	2	1	2	1	1	1	..	...	1	..	2	1	3	2	3	3	8	1	28	12
Fifth	7	4	8	4	...	...	2	1	2	...	7	1	2	2	...	...	5	3	13	7	15	8	10	5	71	35
Sixth	7	1	18	4	9	2	8	1	14	2	7	4	5	4	3	3	11	6	10	3	16	8	23	9	131	47
Seventh	15	1	17	6	13	5	6	2	7	1	5	...	6	3	13	7	28	16	37	15	44	23	22	6	213	85
Eighth	...	...	3	1	1	1	...	...	1	..	2	...	...	...	1	...	1	1	15	4	2	...	21	5	47	12
Ninth	1	...	3	1	4	..	3	1	3	2	1	...	3	...	11	6	13	2	23	7	21	7	19	8	105	34
Tenth	14	3	7	3	9	2	8	1	2	...	5	1	7	3	5	1	2	1	8	3	13	3	12	6	92	27
Eleventh	4	1	6	3	8	4	5	2	8	5	7	3	3	1	4	3	8	3	18	8	11	7	16	10	98	50
Twelfth	3	3	6	1	2	...	1	...	3	1	2	1	3	2	1	...	1	...	4	2	4	3	5	3	35	16
Thirteenth	16	2	6	1	12	2	1	..	7	1	8	4	1	...	...	...	2	...	5	3	6	2	7	1	71	16
Fourteenth	5	2	9	5	4	...	2	...	5	3	6	3	4	2	2	1	2	...	5	3	2	...	4	2	50	21
Fifteenth	9	3	6	3	10	2	2	...	7	3	3	2	...	...	2	1	1	...	5	1	2	...	3	1	50	16
Sixteenth	14	6	11	3	10	4	5	2	11	8	10	3	3	1	5	3	5	4	7	2	7	1	11	8	99	45
Seventeenth	23	7	3	1	3	1	4	1	2	...	2	...	...	...	3	1	1	1	2	1	2	...	4	1	49	14
Eighteenth	3	1	5	1	7	...	5	1	3	2	4	3	3	1	...	...	3	1	3	1	2	1	4	...	42	12
Nineteenth	11	3	5	...	9	6	5	...	10	1	3	1	2	1	6	2	8	4	10	2	13	5	9	2	91	27
Twentieth	7	...	7	...	5	1	3	...	...	...	6	2	6	...	...	...	13	4	14	6	11	4	8	4	80	21
Twenty-first	9	1	6	3	14	7	8	3	9	2	6	3	14	5	3	1	8	3	27	14	18	10	10	3	132	55
Twenty-second	8	1	5	...	4	...	2	...	8	1	1	1	4	1	2	...	5	2	15	4	10	3	12	5	76	18
Twenty-third	9	2	2	...	2	...	7	2	3	1	1	...	...	...	2	...	1	...	3	1	2	1	5	1	37	8
Twenty-fourth	1	...	1	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	2	...	1	...	7	
Twenty-fifth	7	1	6	2	5	1	6	1	2	...	4	..	1	...	1	1	6	2	14	4	3	.	8	3	63	15
Total	194	45	154	45	144	40	92	21	113	36	98	35	70	29	69	32	133	58	255	101	230	94	249	94	1801	630

TABLE XXXII.—DIPHTHERIA—1879.

Cases and Deaths, by Ages and Sexes.

	Males.	Females.	Under 1 year.	Under 2 years.	Under 3 years.	Under 4 years.	Under 5 years.	From 5 to 10 years.	From 10 to 15 years.	From 15 to 20 years.	From 20 to 40 years	From 40 to 60 years	Over 60 years.
Cases	806	995	71	207	236	214	198	500	122	63	166	23	1
Deaths	303	327	41	116	112	84	82	170	11	6	7	1	....

TABLE XXXIII.—SCARLET FEVER—1879.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		Mar.		April.		May		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1879.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	15	6	8	2	23	1	8	1	10	..	1	1	..		..	..	..	..	1	1	3	..	4	..	73	12
Second	6	..	10	3	7	6	10	4	10		8	1	2	..	..	..	1	..	3	1	3	1	1	1	61	17
Third	27	3	17	3	18	1	8	1	2	1	1	..	1	.	2	..	..	..	..	..	1	..	3	..	80	9
Fourth	11	1	7	2	10	..	9	2	5	2	1	1	..	..	2	..	2	..		..	4	..	4	1	55	9
Fifth	6	1	9	..	5	1	10	2	5	..	3	1	6	..	1	..	5	..	4	..	10	..	6	1	70	6
Sixth	39	7	39	4	27	4	15	5	7	1	3	..	4	..	3	..	11	1	1	..	2	..	2	..	153	22
Seventh	11	2	24	6	18	2	21	4	18	1	18	3	2	..	..	..	3	..	..	..	2	..	2	..	119	18
Eighth	1	..	4	1	5	2	4	..	1		4	2	2	1	4	1	4	1	1	..	3	..	1	..	34	8
Ninth	5	..	9	2	12	3	8	1	8	..	3	1	3	..	1	.	3	..	..	..	3	..	2	..	57	7
Tenth	21	3	8	1	20	3	9	3	7	..	1	..	4	1	..	.	..	..	6	3	5	..	4	..	85	14
Eleventh	9	2	18	3	23	1	12	4	10	1	6	1	6	1	1	1	..	..	1	..	5	..	..	..	91	14
Twelfth	10	1	3	1	6	4	5	1	7	2	2	..	3	1	3	1	5	..	..	..	..	..	4	..	48	11
Thirteenth	27	5	12	3	12	2	10	1	7	1	3	..	3	..	2	..	..	..	..	..	..	..	3	..	79	12
Fourteenth	10	3	6	..	6	1	3	..	8	3	14	3	3	..	3	1	10	..	3	2	1	1	4	..	71	14
Fifteenth	6	2	9	1	12	4	14	2	19	4	6	2	2	..	1	1	3	2	3	1	8	..	2	2	84	21
Sixteenth	25	9	14	3	13	2	21	9	14	2	9	1	5	2	3	1	2	..	12	4	17	2	7	1	142	36
Seventeenth	30	7	18	5	19	5	10	2	11	1	9	2	6	..	1	..	6	1	2	..	9	..	14	1	135	24
Eighteenth	6	2	9	..	8	..	6	3	11	2	8	1	1	1	..	..	1	1	..	..	1	..	4	..	55	10
Nineteenth	7	1	12	..	18	2	11	..	15	..	5	1	4		1	..	2	2	3	1	2	1	6	1	86	9
Twentieth	20	1	26	4	27	3	29	5	15	..	11	3	5	..	3	1	4	..	2	..	5	..	5	2	152	19
Twenty-first	12	2	13	1	18	4	21	4	22	4	20	3	23	6	2	..	2	..	4	..	5	..	4	1	146	25
Twenty-second	10	2	11	3	17	..	7	..	10	2	11	4	1	.	1	..	1	..	6	..	4	..	14	1	93	12
Twenty-third	6	..	7	..	17	5	16	2	17	3	11	2	3	..	2	1	6	2	6	..	6	..	4	..	102	14
Twenty-fourth	5	2	2	..	3	2	..	..	2	..	..	..	..	..	..	..	6	..	..	..	1	..	..	..	19	4
Twenty-fifth	11	3	16	3	20	7	18	2	16	..	12	4	7	3	2	..	2	1	1	..	2	..	11	..	118	23
Total	336	65	311	50	364	66	279	61	260	30	170	37	96	16	38	8	79	11	59	13	102	5	111	12	2,208	370

TABLE XXXIV.—SCARLET FEVER—1879.

Cases and Deaths, by Ages and Sexes.

	Males.	Females.	Under 1 year.	Under 2 years.	Under 3 years.	Under 4 years.	Under 5 years.	From 5 to 10 years.	From 10 to 15 years.	From 15 to 20 years.	From 20 to 40 years.	From 40 to 60 years.	Over 60 years.
Cases....	1,053	1,156	90	288	346	306	305	628	142	44	50	6	1
Deaths	204	167	25	83	66	57	33	80	14	5	....	3	....

TABLE XXXV.—TYPHOID FEVER.—1879.

Cases and Deaths, by Months, in each Ward.

Wards.	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1879.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....
Second	..		..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	2	1
Third	..	..	1	..	..	..	2	..	..	..	1	..	..	..	2	..	1	1	1	1	..	..	..	..	8	2
Fourth	..	..	..	..	1	..	..	..	1	..	..	..	..	..	1	..	2	1	..	..	3	1	..	..	8	2
Fifth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	2	2	3	2
Sixth	1	1	3	..	..	..	..	..	..	..	1	..	2	1	..	..	2	2	..	..	1	1	4	2	14	7
Seventh	..	..	..	..	..	..	1	1	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	3	1
Eighth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	2	..	..	..	..	..	3	1
Ninth	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....
Tenth	2	..	..	..	..	..	1	1	..	..	..	..	1	..	..	..	1	..	2	..	..	..	2	1	9	2
Eleventh	..	..	..	..	1	1	..	..	..	..	..	..	1	1	..	..	..	..	1	1	..	..	1	1	4	4
Twelfth	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	1	..	..	..	1	..	..	..	4	....
Thirteenth	1	..	..	..	..	..	..	..	1	..	..	..	1	1	1	..	2	1	..	..	2	1	..	..	8	3
Fourteenth	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2	..	..	..	..	..	1	..	..	..	5	....
Fifteenth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....
Sixteenth	..	..	1	1	..	..	1	1	..	..	..	..	1	1	..	..	1	1	1	..	3	..	..	..	8	4
Seventeenth	1	1	..	..	1	1	..	..	..	..	..	..	2	1	1	1	4	..	..	..	2	..	..	..	11	4
Eighteenth	1	1	2	1	1	1	..	..	1	1	..	..	..	..	..	..	2	2	1	1	1	1	..	..	9	8
Nineteenth	..	..	2	2	..	..	..	..	..	..	..	..	..	..	..	..	3	..	3	1	1	..	..	..	9	3
Twentieth	..	..	3	3	..	..	1	..	..	..	1	1	..	..	4	1	..	..	1	1	..	..	1	..	11	6
Twenty-first	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	4	2
Twenty-second	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	2	1	1	..	..	..	..	..	5	1
Twenty-third	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Twenty-fourth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Twenty-fifth	..	..	..	..	..	..	..	..	2	2	..	..	..	..	..	..	..	..	2	1	2	..	..	..	6	3
Total	9	5	12	7	5	3	7	3	7	4	5	1	11	5	12	2	24	10	16	6	19	4	10	6	137	56

TABLE XXXVI.—TYPHOID FEVER—1879.

Cases and Deaths, by Ages and Sexes.

	Males.	Females.	Under 1 year.	Under 2 years.	Under 3 years.	Under 4 years.	Under 5 years.	From 5 to 10 years.	From 10 to 15 years.	From 15 to 20 years.	From 20 to 40 years.	From 40 to 60 years.	Over 60 years.
Cases	80	57	1	....	1	4	2	16	28	20	44	17	4
Deaths	31	25	....	....	....	2	....	6	8	7	21	10	2

TABLE XXXVII.—CEREBRO-SPINAL MENINGITIS.—1879.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		Mar.		April.		May.		June.		July		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1879.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Death.
First	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		....	....
Second	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		....	....
Third	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		1	1
Fourth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		....	....
Fifth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		....	....
Sixth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		....	....
Seventh	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		....	....
Eighth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..	....
Ninth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		....	....
Tenth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Eleventh	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Twelfth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Thirteenth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Fourteenth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Fifteenth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Sixteenth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Seventeenth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Eighteenth	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
Nineteenth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Twentieth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Twenty-first	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Twenty-second	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Twenty-third	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Twenty-fourth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Twenty-fifth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Total	2	2	..	..	..	..	..	..	..	..	..	..	..		..	..	..	..	..	..	..	..	..	..	2	2

TABLE XXXVIII.—CEREBRO-SPINAL MENINGITIS—1879.

Cases and Deaths, by Ages and Sexes.

	Males.	Females.	Under 1 year.	Under 2 years.	Under 3 years.	Under 4 years.	Under 5 years.	From 5 to 10 years.	From 10 to 15 years.	From 15 to 20 years.	From 20 to 40 years.	From 40 to 60 years.	Over 60 years.
Cases...........	1	1	....	....	1	....	1	....	....	....	....	....	....
Deaths.........	1	1	....	....	1	....	1	....	....	....	....	....	....

TABLE XXXIX.—WHOOPING COUGH.—1879.

Cases and Deaths, by Months, in each Ward.

Wards.	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1879.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	..	..	..	..	..	..	..	..	1	1	..	..	1	1	..	..	1	1	..	..	..	..	..	..	3	3
Second	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	1	1
Third	..	..	..	..	..	..	..	..	12	3	..	..	1	1	1	1	1	1	..	..	..	..	..	..	15	6
Fourth	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	1	1	..	..	..	..	..	..	2	2
Fifth	..	..	..	..	..	..	..	..	..	..	1	1	1	1	2	2	1	1	..	..	2	2	1	1	8	8
Sixth	..	..	..	..	..	..	..	..	1	1	1	1	2	2	1	1	7	3	2	1	1	1	..	..	15	10
Seventh	..	..	..	..	..	..	..	..	..	..	1	1	..	..	1	1	..	..	..	..	..	..	1	1	3	3
Eighth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	1	1	1	1	1	4	4
Ninth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tenth	..	..	..	..	..	..	..	..	2	2	1	1	3	3	2	2	2	2	1	1	2	2	..	..	13	13
Eleventh	..	..	..	..	..	..	..	..	1	1	..	..	1	1	2	1	1	1	..	..	..	..	..	..	5	4
Twelfth	..	..	..	..	..	..	..	..	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	9	9
Thirteenth	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	1	1	1	1	3	3	..	..	6	6
Fourteenth	..	..	..	..	..	..	..	..	2	2	..	..	1	1	..	..	..	..	..	..	..	..	..	..	3	3
Fifteenth	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	1	1	1	1	..	..	..	..	3	3
Sixteenth	..	..	..	..	..	..	..	..	..	..	..	..	2	2	2	2	..	..	..	..	..	..	..	..	4	4
Seventeenth	..	..	..	..	..	..	..	..	1	1	..	..	5	2	4	4	4	3	3	1	..	..	..	..	17	11
Eighteenth	..	..	..	..	..	..	..	..	..	..	1	1	..	..	1	1	2	2	..	..	..	..	..	..	4	4
Nineteenth	..	..	..		..	..	..	..	..	..	..	..	2	2	1	1	1	1	..	..	..	..	..	..	4	4
Twentieth	..	..	..		..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
Twenty-first	..	..	..		..	..	..	..	1	1	1	1	1	1	1	1	..	..	2	2	..	..	..	..	6	6
Twenty-second	..	..	..			..	..	..	..	..	..	..	2	2	..	..	1	1	2	2	1	1	1	1	7	7
Twenty-third	..	..	..		..	..	..	..	..	..	1	1	1	..	..	..	1	1	..	..	..	..	..	..	3	2
Twenty-fourth	..	..	..		..	..	..	..	..	..	1	1	..	..	1	1	..	..	..	..	..	..	..	..	2	2
Twenty-fifth	..	..	..		..	..	..	..	..	..	..	..	1	1	2	2	..	..	..	..	..	..	..	..	3	3
Total	..	..	..		..	..	..	..	24	15	10	10	27	23	22	21	28	23	14	11	11	11	5	5	141	119

TABLE XL.—WHOOPING COUGH—1879.

Cases and Deaths, by Ages and Sexes.

	Males.	Females.	Under 1 year.	Under 2 years.	Under 3 years.	Under 4 years.	Under 5 years.	From 5 to 10 years.	From 10 to 15 years.	From 15 to 20 years.	From 20 to 40 years.	From 40 to 60 years.	Over 60 years.
Cases..........	54	87	67	40	13	9	5	7	....	....	....	....	....
Deaths..........	40	79	60	39	9	5	2	4	....	....	....	....	....

TABLE XLI.—MEASLES—1879.

Cases and Deaths, by Months, in each Ward.

Wards.	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1879.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Second	..	..	..	..	..	..	..	..	..	..	4	..	..	..	..	..	..	..	..	..	..	..	..	..	4	..
Third	..	..	..	..	..	..	..	..	..	..	6	1	4	1	..	..	..	..	..	..	..	..	1	..	11	2
Fourth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	1
Fifth	..	..	..	..	..	..	..	..	..	..	2	1	1	1	..	..	1	..	1	..	1	..	3	1	9	3
Sixth	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	3	..	5	..
Seventh	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	2	..	3	..
Eighth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..
Ninth	..	..	..	..	..	..	..	..	..	..	..	..	4	..	..	..	..	..	..	..	..	..	1	..	5	..
Tenth	..	..	..	..	..	..	..	..	7	1	6	1	3	3	1	1	..	..	..	..	..	..	..	..	17	6
Eleventh	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	7	1	8	1
Twelfth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Thirteenth	..	..	..	..	..	..	..	..	32	2	14	1	2	1	..	..	..	..	..	..	..	..	5	..	53	4
Fourteenth	..	..	..	..	..	..	..	..	1	..	1	..	1	1	1	1	..	..	..	..	5	..	9	..	18	2
Fifteenth	..	..	..	..	..	..	..	..	6	..	4	..	3	1	..	..	..	..	..	..	..	..	1	..	14	1
Sixteenth	..	..	..	..	..	..	1	..	1	..	2	..	6	3	2	1	1	1	4	..	2	1	3	..	22	6
Seventeenth	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	2	..
Eighteenth	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	3	..
Nineteenth	..	..	..	..	..	..	..	..	..	..	2	..	2	..	..	..	1	..	..	..	4	1	7	..	16	1
Twentieth	..	..	..	..	..	..	..	..	..	..	2	..	1	..	2	..	3	..	..	..	2	..	4	..	14	..
Twenty-first	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	2	..	2	1	5	1
Twenty-second	..	..	..	..	..	..	..	..	..	..	1	..	3	1	..	..	..	..	..	..	..	..	4	..	8	1
Twenty-third	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Twenty-fourth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Twenty-fifth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total	..	..	..	..	..	..	2	..	48	3	44	4	33	12	7	3	6	1	5	..	19	2	55	4	219	29

TABLE XLII.—MEASLES—1879.

Cases and Deaths, by Ages and Sexes.

	Males.	Females.	Under 1 year.	Under 2 years.	Under 3 years.	Under 4 years.	Under 5 years.	From 5 to 10 years.	From 10 to 15 years.	From 15 to 20 years.	From 20 to 40 years.	From 40 to 60 years.	Over 60 years.
Cases..........	107	112	20	36	32	19	24	83	2	1	2	....	....
Deaths.........	16	13	10	12	5	1	1	....	....	....	....	....	....

TABLE XLIII.—ALL CONTAGIOUS DISEASES—1879.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1879.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	24	6	9	2	27	1	10	2	11	1	2	1	2	2	3	1	4	4	3	3	10	2	9	3	114	28
Second	7	1	11	3	7	6	11	4	14	3	16	2	3	1	1	1	5	1	9	6	11	3	8	4	103	35
Third	35	4	29	6	25	2	14	2	15	4	9	2	7	3	5	1	3	3	8	3	8	1	20	5	178	36
Fourth	14	2	8	2	13	1	11	3	9	4	2	2	..	..	4	..	7	3	3	2	10	4	13	3	94	26
Fifth	13	5	17	4	5	1	12	3	7	..	13	4	10	4	3	2	12	4	19	7	28	10	22	10	161	54
Sixth	47	9	60	8	36	6	23	6	23	4	12	5	13	7	8	4	31	12	13	4	20	10	32	11	318	86
Seventh	26	3	41	12	31	7	28	7	25	2	26	4	10	3	14	8	31	16	37	15	46	23	27	7	342	107
Eighth	1	..	7	2	6	3	4	..	2	..	6	2	2	1	5	1	7	4	19	5	7	1	23	6	89	25
Ninth	7	..	12	3	16	3	11	2	11	2	4	1	10	..	12	6	16	2	23	7	24	7	22	8	168	41
Tenth	37	6	15	4	29	5	18	5	18	3	13	3	18	10	8	4	5	3	17	7	20	5	18	7	216	62
Eleventh	13	3	24	6	32	6	17	6	19	7	13	4	11	4	7	5	9	4	20	9	17	7	24	12	206	73
Twelfth	14	4	9	2	8	4	7	1	11	4	7	3	7	4	5	2	8	1	5	3	6	4	10	4	97	36
Thirteenth	44	7	18	4	24	4	11	1	47	4	25	5	8	3	3	..	5	2	6	4	11	6	15	1	217	41
Fourteenth	15	5	15	5	10	1	5	..	16	8	21	6	11	4	8	3	12	..	8	5	9	1	17	2	147	40
Fifteenth	15	5	15	4	22	6	16	2	31	7	13	4	6	2	3	2	5	3	9	3	11	..	6	3	152	41
Sixteenth	39	15	26	6	23	7	28	12	26	10	21	4	17	9	11	6	9	6	22	5	25	4	20	9	275	95
Seventeenth	54	15	21	6	23	7	14	3	14	2	13	2	14	3	10	7	15	5	9	3	18	..	19	2	216	53
Eighteenth	10	4	16	2	16	1	12	4	15	5	13	5	4	2	1	1	8	6	4	2	4	2	11	1	114	35
Nineteenth	18	4	19	2	27	8	16	..	25	1	10	2	10	3	8	3	14	7	17	4	20	7	22	3	206	44
Twentieth	27	1	36	7	32	4	33	5	16	1	20	6	12	..	9	2	20	4	17	7	18	4	18	6	258	47
Twenty-first	23	5	19	4	32	11	29	7	32	8	26	7	39	12	6	2	12	3	33	16	23	10	14	4	288	88
Twenty-second	18	3	16	3	21	..	9	..	19	3	12	5	7	3	4	..	9	4	24	6	17	4	29	8	186	39
Twenty-third	15	2	9	..	19	5	23	4	21	3	14	3	7	1	4	1	8	3	9	1	8	1	13	1	150	25
Twenty-fourth	6	2	3	..	4	2	..	..	2	..	2	1	..	..	1	1	6	..	..	..	3	..	1	..	28	6
Twenty-fifth	18	4	22	5	25	8	24	3	20	2	16	4	9	4	5	3	8	3	17	5	7	..	19	3	190	44
Total	540	115	477	102	513	109	386	82	449	87	330	87	237	85	148	66	270	103	350	132	381	116	432	123	4,513	1,207

TABLE XLIV.—SMALL POX—1880.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1880.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Second	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Third	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	1	1	..	5	1
Fourth		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Fifth		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	....
Sixth		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Seventh		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Eighth		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Ninth		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Tenth		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Eleventh		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Twelfth		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....
Thirteenth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Fourteenth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Fifteenth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Sixteenth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	2	1	1	..	..	..	..	..	4	1
Seventeenth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Eighteenth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Nineteenth	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....
Twentieth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Twenty-first	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....
Twenty-second	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Twenty-third	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Twenty-fourth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Twenty-fifth	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	....
Total	1	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	2	1	2	..	5	1	2	..	14	2

TABLE XLV.—SMALLPOX—1880.

Cases and Deaths in City and Hospital each Month.

MONTHS.	IN CITY.		SENT TO HOSPITAL		TOTAL FOR 1880.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
January	1	....	....	....	1	....
February	....	....	....	....	....	....
March	....	....	....	....	....	....
April	....	....	....	....	....	....
May	....	....	....	....	....	....
June	....	....	....	....	....	....
July	....	....	1	....	1	....
August	....	....	1	....	1	....
September	1	....	1	1	2	1
October	....	....	2	....	2	....
November	1	....	4	1	5	1
December	1	....	1	....	2	....
Total	4	....	10	2	14	2

TABLE XLVI.—SMALLPOX IN 1880, BY WARDS.

Cases remaining in City and Cases sent to Hospital, with Deaths in each class of Cases.

WARDS.	IN CITY.		SENT TO HOSPITAL		TOTAL FOR 1880.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First						
Second						
Third	1		4	1	5	1
Fourth						
Fifth	1				1	
Sixth			1		1	
Seventh						
Eighth						
Ninth						
Tenth						
Eleventh						
Twelfth			1		1	
Thirteenth						
Fourteenth						
Fifteenth						
Sixteenth	1		3	1	4	1
Seventeenth						
Eighteenth						
Nineteenth						
Twentieth						
Twenty-first	1				1	
Twenty-second						
Twenty-third						
Twenty-fourth						
Twenty-fifth			1		1	
Total	4		10	2	14	2

TABLE XLVII.—SMALLPOX—1880.

Cases and Deaths, by Ages and Sexes.

	Males.	Females.	Under 1 Year.	Under 2 Years.	Under 3 Years.	Under 4 Years.	Under 5 Years.	From 5 to 10 Years.	From 10 to 15 Years.	From 15 to 20 Years.	From 20 to 40 Years.	From 40 to 60 Years.	Over 60 Years.
Cases..........	10	4	....	1	1	....	....	1	2	2	7	....	....
Deaths..........	....	2	. ..	2	....	....	....	....	....	....	....	....	....

TABLE XLVIII.—DIPHTHERIA—1880.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1877.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	9	2	7	1	8	4	3	..	6	2	7	5	1	1	13	5	7	4	9	4	5	1	8	3	83	32
Second	9	3	3	1	...	...	2	1	3	3	4	2	...	...	9	5	8	3	10	4	22	7	9	2	79	31
Third	8	2	9	3	7	4	10	3	4	...	7	2	4	1	1	...	5	3	17	9	34	16	29	8	145	51
Fourth	9	3	6	2	4	1	7	5	1	...	3	2	2	2	1	...	7	1	6	2	13	3	25	6	84	27
Fifth	10	3	20	10	6	2	6	2	23	14	14	10	5	3	6	6	29	18	18	8	26	12	26	8	189	96
Sixth	17	6	16	5	15	3	7	2	4	...	3	...	8	1	4	3	9	3	24	8	23	6	52	21	183	58
Seventh	24	8	19	8	11	3	7	4	9	1	2	...	4	1	1	1	13	4	37	11	42	13	29	6	198	60
Eighth	10	1	12	4	2	...	4	1	4	2	16	6	6	4	4	2	18	8	8	1	15	7	13	6	112	42
Ninth	12	3	5	1	...	...	1	...	7	2	3	...	1	1	...	...	8	3	24	16	15	7	5	...	81	33
Tenth	5	2	12	4	8	1	13	3	11	2	7	...	4	1	4	...	11	5	19	11	33	16	52	18	179	63
Eleventh	6	4	5	5	2	1	6	..	4	1	2	...	2	...	2	...	20	7	45	27	30	16	24	8	148	69
Twelfth	6	3	5	1	5	1	6	1	2	...	5	...	6	1	7	3	6	1	29	9	32	12	8	5	117	37
Thirteenth	3	2	2	1	5	2	4	2	3	1	5	3	1	...	4	...	2	2	7	3	13	3	28	11	77	30
Fourteenth	2	1	4	...	1	1	6	5	4	...	3	...	...	...	13	5	17	10	23	7	50	12	25	7	148	48
Fifteenth	1	...	4	2	1	...	2	1	5	3	1	1	...	...	1	...	7	1	11	6	12	8	14	7	59	29
Sixteenth	7	3	6	2	8	5	6	2	11	5	13	7	11	7	18	5	28	11	20	10	34	14	37	14	199	85
Seventeenth	3	...	4	4	3	2	4	1	1	...	2	...	2	...	2	2	5	1	8	2	31	10	32	7	97	29
Eighteenth	8	3	2	...	7	3	3	...	4	...	5	2	2	1	9	7	11	4	10	3	11	5	13	6	85	34
Nineteenth	7	4	9	2	17	3	5	2	14	4	9	2	1	1	3	...	5	1	8	2	9	5	11	2	98	28
Twentieth	8	1	10	1	3	1	5	2	6	1	5	4	2	1	17	6	12	4	21	8	41	18	40	5	170	52
Twenty-first	18	9	9	2	15	2	9	4	6	3	13	4	11	2	7	1	9	5	19	8	25	14	50	14	191	68
Twenty-second	23	9	13	3	10	3	16	6	9	3	11	3	4	1	1	...	7	3	5	1	17	5	11	3	126	40
Twenty-third	2	1	5	2	3	...	5	1	3	2	5	...	2	...	...	...	7	1	8	1	10	...	14	6	62	14
Twenty fourth	1	1	...	...	4	..	2	...	9	3	6	1	4	...	...	...	...	...	2	1	8	6	14	4	50	16
Twenty-fifth	3	2	4	1	8	...	2	1	2	1	3	1	3	2	...	...	3	1	19	2	38	18	21	3	98	32
Total	211	76	191	65	153	42	141	49	155	53	154	55	86	31	127	51	254	104	407	164	589	234	590	180	3,058	1,104

TABLE XLIX.—DIPHTHERIA—1880.

Cases and Deaths, by Ages and Sexes.

	Males.	Females.	Under 1 year.	Under 2 years.	Under 3 years.	Under 4 years.	Under 5 years.	From 5 to 10 years.	From 10 to 15 years.	From 15 to 20 years.	From 20 to 40 years.	From 40 to 60 years.	Over 60 years.
Cases	1456	1602	113	335	361	411	355	939	245	90	176	39	6
Deaths..........	514	590	57	168	174	170	154	315	44	11	4	6	1

TABLE L.—SCARLET FEVER, 1880.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		Mar.		April.		May.		June		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total, 1880.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	7	1	1	...	3	...	2	...	6	...	2	...	...	...	...	...	1	...	...	...	2	...	6	3	30	4
Second	2	1	1	1	...	...	...	...	2	1	1	...	2	2	...	...	...	...	...	...	1	...	2	1	11	6
Third	4	1	2	...	2	...	4	...	1	...	3	...	1	..	1	1	...	...	3	...	6	1	13	1	40	4
Fourth	2	...	5	2	14	3	3	1	2	...	5	1	...	...	...	...	3	..	...	...	5	...	8	2	47	9
Fifth	2	2	3	...	4	...	6	1	4	3	1	...	1	...	...	...	1	...	...	...	...	...	3	...	25	6
Sixth	6	...	4	...	7	1	5	...	...	...	5	2	1	...	2	...	5	2	7	1	16	2	16	1	74	9
Seventh	6	...	8	...	8	...	1	...	7	...	3	...	2	2	2	..	5	1	4	...	6	..	18	1	70	4
Eighth	6	2	1	...	1	...	2	.	1	...	4	1	...	...	1	...	...	...	...	...	11	2	20	2	47	7
Ninth	1	...	4	...	3	...	4	1	2	...	3	...	8	1	2	...	13	2	7	..	8	1	27	4	82	9
Tenth	2	...	2	...	6	..	4	. .	7	1	2	...	1	..	2	...	7	2	18	2	25	4	13	2	88	11
Eleventh	7	...	5	2	4	...	3	1	3	..	2	...	3	...	2	...	1	...	...	...	4	1	6	3	40	7
Twelfth	3	...	...	...	1	...	3	...	7	..	5	1	4	1	2	1	13	5	10	2	4	...	4	1	56	11
Thirteenth	3	...	6	2	12	2	10	3	2	...	6	...	...	...	...	...	1	...	2	...	4	...	11	..	57	7
Fourteenth	4	...	2	2	4	1	2	. .	2	1	.	...	...	...	...	...	...	...	1	...	1	1	2	...	18	5
Fifteenth	10	2	6	1	12	4	8	2	5	1	5	2	1	...	1	...	2	1	...	...	5	...	18	2	73	15
Sixteenth	9	1	10	6	5	1	8	5	7	2	14	4	7	1	12	4	17	2	15	1	24	3	74	7	202	37
Seventeenth	20	1	19	3	11	...	19	1	7	...	6	...	3	1	9	2	3	2	7	3	7	..	22	3	132	16
Eighteenth	4	...	6	2	8	2	6	1	8	5	5	...	1	..	5	1	6	...	9	...	9	...	26	2	93	13
Nineteenth	9	1	12	3	11	2	11	1	7	...	13	1	4	...	2	...	...	...	4	...	9	...	28	1	110	9
Twentieth	8	1	3	2	9	2	2	...	4	..	1	...	2	...	1	. .	2	...	2	...	6	...	10	...	50	5
Twenty-first	15	3	7	2	4	1	6	1	9	...	13	2	1	...	1	...	7	2	3	...	14	...	37	5	117	16
Twenty-second	5	1	4	1	1	...	5	...	8	1	3	...	3	...	...	...	1	1	3	...	15	8	35	1	83	13
Twenty-third	3	...	2	1	11	1	6	...	2	...	2	...	3	...	...	...	4	...	4	..	9	...	10	1	56	3
Twenty fourth	4	...	2	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	5	1	14	1
Twenty-fifth	9	2	3	1	2	...	2	1	5	1	4	...	..	...	...	...	1	1	10	1	11	3	23	3	80	13
Total	151	19	118	31	144	20	121	19	108	16	108	14	48	8	45	9	93	21	109	10	203	26	437	47	1,695	240

TABLE LI.—SCARLATINA—1880.

Cases and Deaths, by Ages and Sexes.

	Males.	Females.	Under 1 year.	Under 2 years.	Under 3 years.	Under 4 years.	Under 5 years.	From 5 to 10 years.	From 10 to 15 years.	From 15 to 20 years	From 20 to 40 years	From 40 to 60 years.	Over 60 years.
Cases........	832	895	48	196	266	257	250	565	102	23	18	2	...
Deaths..........	133	105	18	42	38	44	29	54	4	4	5	....	...

TABLE LII.—TYPHOID FEVER—1880.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1880.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...
Second	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Third	1	1	1	1	...	...	...	...	...	...	...	...	...	...	...	...	2	2	...	...	1	...	...	...	5	4
Fourth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	1	...	2	1
Fifth	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1
Sixth	1	1	...	...	...	...	1	...	...	...	3	3	...	...	...	...	2	2	2	2	2	1	3	2	14	11
Seventh	2	1	1	...	1	1	...	...	...	...	1	1	1	...	...	...	3	...	...	...	...	...	2	...	11	3
Eighth	...	...	...	...	...	...	3	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	4	...
Ninth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	3	1	2	...	...	...	6	2
Tenth	...	...	1	...	...	...	...	...	...	...	1	1	1	...	4	3	1	...	1	1	4	2	1	...	14	7
Eleventh	1	1	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	1	...	...	...	...	...	3	2
Twelfth	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1
Thirteenth	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	1	1	2	1	4	3
Fourteenth	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	1	4	1
Fifteenth	1	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	2	1	1	...	1	1	...	...	6	3
Sixteenth	1	1	2	...	2	2	1	1	...	...	...	...	1	1	2	2	1	1	2	1	3	...	1	...	16	9
Seventeenth	1	...	...	...	...	...	...	...	1	...	...	...	...	...	2	1	1	1	...	...	4	1	1	...	10	3
Eighteenth	...	...	...	...	1	1	1	1	...	...	...	...	2	1	1	...	4	2	2	2	...	...	...	...	11	7
Nineteenth	1	...	...	...	...	...	1	1	1	1	...	...	1	...	...	...	2	1	2	1	...	...	...	...	8	4
Twentieth	...	...	...	...	...	...	...	...	...	...	2	1	1	1	...	...	...	...	2	2	...	...	...	...	5	4
Twenty-first	1	...	1	...	...	...	...	...	...	...	...	...	1	1	1	1	1	...	...	...	...	...	1	...	6	2
Twenty-second	...	...	...	...	1	1	...	...	...	...	...	...	1	1	...	...	...	...	1	...	1	...	...	...	4	2
Twenty-third	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	1	...	...	...	1	...	1	...	4	1
Twenty-fourth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	1	1
Twenty-fifth	1	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	1
Total	11	6	9	1	6	6	7	3	5	4	7	6	10	6	12	9	22	11	18	10	22	7	14	4	143	73

TABLE LIII.—TYPHOID FEVER—1880.

Cases and Deaths, by Ages and Sexes.

	Males.	Females.	Under 1 year.	Under 2 years.	Under 3 years.	Under 4 years.	Under 5 years	From 5 to 10 years.	From 10 to 15 years.	From 15 to 20 years.	From 20 to 40 years.	From 40 to 60 years.	Over 60 years.
Cases	80	63	....		2	3	2	13	14	30	64	12	3
Deaths	42	31	....		....	....	1	6	5	16	36	7	2

TABLE LIV.—CEREBRO-SPINAL MENINGITIS, 1880.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1880.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases	Deaths.	Cases.	Deaths.
First	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Second	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Third	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fourth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fifth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sixth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...
Seventh	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Eighth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ninth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tenth	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Eleventh	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Twelfth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Thirteenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fourteenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fifteenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sixteenth	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	2	...
Seventeenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Eighteenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Nineteenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Twentieth	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Twenty-first	...	...	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	3	2
Twenty-second	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Twenty-third	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Twenty-fourth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Twenty-fifth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	1	...	...	2	1
Total	...	...	2	1	...	...	...	...	2	...	...	...	1	...	...	...	...	...	1	...	3	1	1	1	10	3

TABLE LV.—CEREBRO-SPINAL MENINGITIS—1880.

Cases and Deaths, by Ages and Sexes.

	Males.	Females.	Under 1 year.	Under 2 years.	Under 3 years.	Under 4 years.	Under 5 years.	From 5 to 10 years.	From 10 to 15 years.	From 15 to 20 years.	From 20 to 40 years.	From 40 to 60 years.	Over 60 years.
Cases	5	5	1	....	....	2	....	5	1	....	..	1	....
Deaths	1	2	1	....	....	1	....	....	1	...	....	....	....

TABLE LVI.—WHOOPING COUGH, 1880.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1880.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	2	1	...	...	...	...	3	2
Second	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1
Third	3	3	...	...	...	...	...	...	1	1	...	...	...	...	2	2	...	...	1	...	...	...	...	...	7	6
Fourth	1	1	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	2
Fifth	2	2	1	1	1	1	2	2	1	1	...	...	...	...	...	...	...	...	...	...	1	1	...	...	8	8
Sixth	5	5	1	1	3	3	1	1	1	1	1	1	...	...	...	...	...	...	3	2	...	...	1	...	16	14
Seventh	...	...	1	1	...	...	3	1	1	1	...	...	1	1	1	1	1	...	...	...	1	...	...	...	9	5
Eighth	...	...	...	...	2	2	...	...	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	4
Ninth	...	...	...	...	...	...	...	...	...	...	...	...	1	1	1	1	...	...	...	...	...	...	...	...	2	2
Tenth	1	1	1	1	...	...	...	...	...	...	1	1	...	...	1	1	...	...	3	3	...	...	...	...	7	7
Eleventh	...	...	2	1	...	...	...	...	3	3	2	2	...	...	1	1	1	...	...	...	1	...	...	...	10	7
Twelfth	...	...	1	1	...	...	1	1	...	...	...	...	...	...	1	1	1	1	...	...	...	...	...	...	4	4
Thirteenth	...	...	...	...	...	...	...	...	1	1	1	1	3	2	1	1	...	...	1	1	1	1	...	...	8	7
Fourteenth	...	...	...	...	...	...	...	...	...	...	...	...	2	2	...	...	1	1	...	...	...	...	1	1	4	4
Fifteenth	...	...	...	...	1	1	...	...	...	...	...	...	...	...	2	2	1	1	...	...	...	...	...	...	4	4
Sixteenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	2	2	...	...	...	...	...	...	3	3
Seventeenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Eighteenth	...	...	1	1	...	...	...	...	...	...	1	1	...	...	...	...	2	2	1	1	1	1	...	...	6	6
Nineteenth	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1
Twentieth	...	...	1	1	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	2	2
Twenty-first	...	...	3	2	...	...	2	2	...	...	1	1	1	1	4	4	2	2	...	...	...	...	...	...	13	12
Twenty-second	...	...	1	1	...	...	...	...	...	...	1	1	2	2	...	...	1	1	...	...	...	...	...	...	5	5
Twenty-third	...	...	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	...
Twenty-fourth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Twenty-fifth	...	...	...	...	...	...	...	...	...	...	1	1	1	1	...	...	4	...	...	...	...	...	...	...	6	2
Total	12	12	18	11	9	9	11	9	10	10	9	9	12	11	15	15	16	10	11	8	5	3	2	1	130	108

TABLE LVII.—WHOOPING COUGH—1880.

Cases and Deaths, by Ages and Sexes.

	Males.	Females.	Under 1 year.	Under 2 years.	Under 3 years.	Under 4 years	Under 5 years.	From 5 to 10 years.	From 10 to 15 years.	From 15 to 20 years.	From 20 to 40 years.	From 40 to 60 years.	Over 60 years.
Cases..........	61	68	59	37	13	5	4	10	....	....	....	....	....
Deaths.........	51	57	56	36	8	3	3	2	....	....	....	....	....

TABLE LVIII.—MEASLES—1880.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		March.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1880.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	5	...	30	...	23	2	39	...	18	1	3	2	...	...	...	...	...	...	...	...	...	...	...	...	118	5
Second	1	...	6	1	4	1	4	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	17	2
Third	6	1	31	1	52	1	24	1	22	8	5	1	...	...	...	...	1	...	...	...	...	...	...	...	141	13
Fourth	2	...	15	...	35	2	8	...	6	...	2	...	...	...	...	...	1	...	...	...	1	...	1	...	71	2
Fifth	5	2	14	1	26	2	15	3	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	62	9
Sixth	4	...	10	2	24	1	40	4	39	6	28	4	9	1	2	1	1	...	1	1	1	...	1	...	160	19
Seventh	17	...	73	...	91	4	24	2	13	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	219	6
Eighth	...	...	8	...	30	...	9	2	11	1	4	...	...	...	1	...	...	...	...	...	...	...	...	...	63	3
Ninth	40	...	29	1	41	2	28	3	10	...	2	...	1	...	...	...	...	...	...	...	...	...	...	...	151	6
Tenth	6	1	15	...	29	1	21	1	21	...	20	...	3	1	...	...	1	...	...	...	1	...	3	...	120	4
Eleventh	5	...	27	1	39	1	34	1	9	...	9	...	...	...	...	...	...	...	...	...	1	...	1	...	125	3
Twelfth	2	2	...	...	8	3	14	2	4	2	17	3	1	...	2	2	...	...	4	1	6	1	1	...	59	16
Thirteenth	2	1	9	1	7	...	2	...	13	...	24	2	...	...	...	...	...	...	...	...	...	...	1	...	58	4
Fourteenth	16	4	8	1	2	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	29	5
Fifteenth	12	...	45	2	9	...	6	1	3	1	2	1	...	...	...	...	1	...	...	...	2	...	1	...	81	5
Sixteenth	2	1	13	...	20	1	11	1	2	1	2	...	...	...	...	...	...	...	...	...	...	...	4	...	54	4
Seventeenth	6	...	30	...	33	2	39	8	14	3	7	4	3	1	...	...	...	...	...	...	...	...	...	...	132	18
Eighteenth	6	...	4	...	21	2	12	...	14	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	59	2
Nineteenth	3	...	14	3	13	2	4	1	4	2	4	1	1	1	...	...	...	...	1	...	...	...	1	...	45	10
Twentieth	15	...	31	...	56	...	48	1	19	...	4	...	...	...	...	...	...	...	...	...	...	...	1	...	174	1
Twenty-first	5	...	32	1	33	3	27	...	10	1	2	1	1	...	...	...	...	...	...	...	...	...	...	...	110	6
Twenty-second	27	...	39	...	64	2	14	3	10	1	4	...	2	...	...	...	...	...	...	...	...	...	1	...	166	6
Twenty-third	1	...	13	...	35	1	33	...	8	...	2	...	...	...	...	...	...	...	1	...	3	...	3	...	99	1
Twenty-fourth	...	...	13	...	13	...	13	...	18	1	60	2	10	...	...	...	...	...	...	...	...	...	...	...	127	3
Twenty-fifth	2	...	18	...	71	1	22	1	18	...	6	1	...	...	...	...	...	...	...	...	...	...	...	...	137	3
Total	190	12	527	15	779	34	491	35	289	28	208	22	31	4	5	3	5	...	7	2	18	1	22	...	2572	156

TABLE LIX.—MEASLES—1880.

Cases and Deaths by Ages and Sexes.

	Males.	Females.	Under 1 year.	Under 2 years.	Under 3 years,	Under 4 years.	Under 5 years.	From 5 to 10 years.	From 10 to 15 years.	From 15 to 20 years.	From 20 to 40 years.	From 40 to 60 years.	Over 60 years.
Cases.	1301	1271	177	296	275	301	259	995	151	47	69	2	....
Deaths.	80	76	40	51	31	10	4	15	2	....	3	...	....

TABLE LX.—ALL CONTAGIOUS DISEASES—1880.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1880.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	21	3	38	1	34	6	45	1	30	3	12	7	1	1	13	5	8	4	11	5	8	1	18	8	239	45
Second	12	4	10	3	4	1	7	2	6	4	5	2	2	2	9	5	8	3	10	4	23	7	13	4	119	41
Third	22	8	43	4	61	5	38	4	28	9	15	3	5	1	4	3	8	5	21	9	45	18	64	20	354	89
Fourth	14	4	26	4	54	7	18	6	9	...	10	3	2	2	1	...	11	1	6	2	20	4	30	9	201	42
Fifth	19	9	38	13	37	5	29	8	30	19	15	10	6	3	6	6	30	18	18	8	28	13	30	8	286	120
Sixth	33	12	31	7	49	8	54	7	44	7	40	10	18	2	8	4	17	7	37	14	43	9	73	24	447	121
Seventh	49	9	102	9	111	8	35	7	30	2	6	1	8	4	4	2	22	5	41	11	49	13	50	7	507	78
Eighth	16	3	21	4	35	2	18	3	18	5	24	7	6	4	6	2	19	8	8	1	26	9	33	8	230	56
Ninth	53	3	38	2	44	2	33	4	19	2	8	...	11	3	3	1	22	6	34	17	25	8	32	4	322	52
Tenth	14	4	31	5	43	2	38	4	40	3	31	2	9	2	11	4	20	7	41	17	63	22	60	18	401	90
Eleventh	19	5	39	9	45	2	43	2	19	4	15	2	5	...	6	2	22	7	46	27	36	17	31	11	326	88
Twelfth	11	5	6	2	15	5	24	4	13	2	27	4	11	2	12	7	20	7	44	12	42	13	13	6	238	69
Thirteenth	8	3	17	4	24	4	16	5	20	3	36	6	4	2	5	1	3	2	10	4	19	5	42	13	204	52
Fourteenth	21	5	16	3	7	2	8	5	7	1	3	...	2	2	13	5	18	11	25	7	52	13	30	9	202	63
Fifteenth	24	3	56	5	23	5	16	4	13	5	8	4	1	...	4	2	13	4	12	6	20	9	33	9	223	56
Sixteenth	19	6	31	8	35	9	26	9	20	8	29	11	20	9	34	12	50	17	39	12	61	17	116	21	470	139
Seventeenth	30	1	53	7	47	4	62	10	23	3	15	4	8	2	13	5	9	4	15	5	42	11	55	11	372	67
Eighteenth	18	3	13	3	37	8	22	2	26	5	12	3	5	2	15	8	23	8	22	6	22	6	39	8	254	62
Nineteenth	21	5	35	8	42	8	21	5	26	7	26	4	7	2	5	...	7	2	15	3	18	5	40	3	263	52
Twentieth	31	2	45	4	68	3	55	3	30	1	12	5	6	3	18	6	14	4	25	10	47	18	51	5	402	64
Twenty-first	39	12	54	8	52	6	44	7	25	4	29	8	15	4	13	6	19	9	22	8	40	14	89	20	441	106
Twenty-second	55	10	57	5	76	6	35	9	27	5	19	4	12	4	1	...	9	5	9	1	33	13	47	4	380	66
Twenty-Third	6	1	25	3	49	2	44	1	13	2	9	...	6	1	...	...	12	1	12	1	23	...	28	7	227	19
Twenty-fourth	5	1	15	...	18	...	15	...	27	4	66	3	14	...	1	1	...	...	4	1	9	6	19	5	193	21
Twenty-fifth	15	4	25	2	81	1	26	3	26	3	14	3	5	3	...	...	8	2	29	3	51	22	44	6	324	52
Total	575	125	865	123	1091	111	772	115	569	111	486	106	189	60	205	87	392	147	556	194	845	273	1080	248	7625	1710

TABLE LXI.—SMALLPOX—1881.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1881.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	...	...	...	...	1	...	...	...	3	...	2	...	...	...	...	...	...	...	...	...	2	...	...	...	8	....
Second	5	...	...	...	3	...	...	...	1	...	...	...	...	...	2	...	...	...	...	...	...	...	1	.	12	....
Third	3	...	1	...	...	...	...	...	2	...	2	...	1	...	...	...	...	...	...	...	...	...	...	...	9	....
Fourth	2	...	3	...	2	1	5	...	1	1	2	...	1	...	...	...	...	...	...	...	...	...	2	...	18	2
Fifth	4	...	3	...	1	...	4	...	4	...	2	...	...	...	6	...	3	...	...	...	1	...	1	..	29	....
Sixth	5	...	3	...	4	...	2	...	5	...	3	...	4	1	1	1	...	...	...	...	2	...	2	...	31	2
Seventh	...	...	1	...	1	...	...	...	1	...	4	1	...	...	1	...	...	...	...	...	...	...	...	...	8	1
Eighth	2	...	5	...	...	...	...	...	4	...	9	...	4	...	3	...	1	...	...	...	...	...	...	...	28	....
Ninth	1	...	...	...	...	...	...	...	...	...	2	..	2	1	...	...	1	...	1	...	1	..	1	...	9	1
Tenth	2	...	1	...	5	...	...	...	1	...	4	..	1	...	...	...	...	...	...	...	...	...	1	...	15	....
Eleventh	1	...	...	...	1	...	...	...	4	1	...	...	...	...	2	...	...	...	1	...	1	...	..	...	10	1
Twelfth	...	...	4	...	5	...	...	...	5	...	8	1	2	...	...	...	1	1	...	...	1	...	1	...	27	2
Thirteenth	...	...	...	...	...	..	1	...	3	1	7	...	2	..	1	...	...	...	1	...	1	...	1	...	17	1
Fourteenth	...	...	...	...	1	...	...	...	9	2	9	1	12	2	3	...	...	...	1	...	...	...	2	...	37	5
Fifteenth	3	...	3	...	1	...	2	...	1	...	6	...	2	...	1	...	...	...	2	...	1	...	3	1	25	1
Sixteenth	...	...	1	...	3	1	22	...	4	1	1	1	3	...	1	...	...	...	5	...	11	...	7	1	58	4
Seventeenth	1	...	2	...	3	1	...	...	3	...	7	...	1	...	...	...	...	...	...	...	...	...	2	...	19	1
Eighteenth	...	...	3	...	...	...	1	...	1	...	4	...	...	...	1	..	4	...	3	1	7	2	7	1	31	4
Nineteenth	...	...	...	...	2	...	2	...	4	...	3	..	...	...	...	...	...	...	1	...	2	...	2	...	16	....
Twentieth	...	...	8	...	...	...	1	...	2	...	1	...	2	...	...	...	...	...	...	...	1	...	...	...	15	....
Twenty-first	...	...	2	...	1	...	...	...	...	...	1	...	2	...	2	...	...	...	3	...	3	...	3	1	17	1
Twenty-second	3	1	3	1	4	..	2	1	2	...	2	...	1	...	...	...	...	...	...	...	...	...	1	...	18	3
Twenty-third	...	...	...	...	...	...	...	...	...	...	7	1	6	1	2	1	2	...	...	...	2	1	1	...	20	4
Twenty-fourth	...	...	1	...	1	...	...	...	1	...	...	...	3	1	...	...	...	...	2	...	1	...	...	...	9	1
Twenty-fifth	...	...	...	...	...	...	2	...	1	1	1	...	2	...	1	...	...	...	2	...	1	...	2	...	12	1
Total	32	1	44	1	39	3	44	1	62	7	87	5	51	6	27	2	12	1	22	1	38	3	40	4	498	35

TABLE LXII.—SMALLPOX—1881.

Cases and Deaths in City and Hospital, each Month.

MONTHS.	In City.		Sent to Hospital		Total for 1881.	
	Cases.	Deaths.	Cases.	Deaths	Cases.	Deaths.
January	5	1	27	6	32	7
February	17	1	27	9	44	10
March	9	3	30	6	39	9
April	19	1	25	10	44	11
May	25	7	37	13	62	20
June	35	5	52	13	87	18
July	11	6	40	13	51	19
August	4	2	23	4	27	6
September	5	1	7	3	12	4
October	6	1	16	11	22	12
November	6	3	32	10	38	13
December	13	4	27	9	40	13
Total	155	35	343	107	498	142

TABLE LXIII—SMALLPOX IN 1881, BY WARDS.

Cases remaining in City and Cases sent to Hospital, with Deaths in each Class of Cases.

WARDS.	In City.		Sent to Hospital		Total for 1881.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	2	....	6	2	8	2
Second	2	....	10	....	12	....
Third	4	....	5	....	9	....
Fourth	8	2	10	2	18	4
Fifth	7	....	22	6	29	6
Sixth	9	2	22	8	31	10
Seventh	4	1	4	1	8	2
Eighth	3	....	25	4	28	4
Ninth	2	1	7	3	9	4
Tenth	1	1	14	7	15	8
Eleventh	3	1	7	2	10	3
Twelfth	6	2	21	8	27	10
Thirteenth	7	1	10	1	17	2
Fourteenth	7	5	30	9	37	14
Fifteenth	8	....	17	6	25	6
Sixteenth	13	4	45	20	58	24
Seventeenth	2	1	17	3	19	4
Eighteenth	11	4	20	8	31	12
Nineteenth	9	....	7	1	16	1
Twentieth	7	....	8	3	15	3
Twenty-first	4	1	13	4	17	5
Twenty-second	10	3	8	3	18	6
Twenty-third	17	4	3	....	20	4
Twenty-fourth	3	1	6	4	9	5
Twenty-fifth	6	1	6	2	12	3
Total	155	35	343	107	498	142

TABLE LXIV—SMALLPOX—1881.

Cases and Deaths, by Ages and Sexes.

	Males.	Females.	Under 1 Year.	Under 2 Years.	Under 3 Years.	Under 4 Years.	Under 5 Years.	From 5 to 10 Years.	From 10 to 15 Years.	From 15 to 20 Years.	From 20 to 40 Years	From 40 to 60 Years.	Over 60 Years.
Cases retained in City..........	82	73	2	3	3	3	3	9	8	10	54	18	2
Cases fatal in City	20	16	1	2	2	3	3	6	2	2	9	4	2
Cases sent to Hospital..........	199	144	21	14	15	17	14	44	24	30	136	22	6
Cases fatal at Hospital..........	55	51	12	11	6	9	6	22	3	2	26	6	3

TABLE LXV.—DIPHTHERIA—1881.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb		Mar.		April.		May		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1881.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	13	3	1	...	9	5	13	5	9	2	6	3	1	...	...	...	2	1	5	...	3	...	4	...	66	19
Second	11	8	9	6	6	1	...	...	7	...	4	...	1	...	7	3	9	3	6	4	7	3	8	4	75	32
Third	17	5	9	5	8	3	14	8	13	5	1	...	1	1	7	2	1	1	6	...	2	1	12	2	91	33
Fourth	15	6	8	2	3	1	7	2	6	2	9	4	4	1	2	...	2	2	1	...	6	2	6	3	69	25
Fifth	23	7	10	2	4	2	1	...	5	1	7	3	6	1	3	1	3	1	10	6	2	1	3	1	77	26
Sixth	32	20	30	19	25	9	25	13	26	6	19	5	8	4	24	10	16	4	28	14	25	11	10	3	268	118
Seventh	18	9	19	7	17	6	3	2	8	4	9	4	18	11	15	5	8	1	15	8	20	5	17	5	167	67
Eighth	9	2	11	3	9	2	8	1	7	...	15	3	4	1	4	1	12	6	14	2	9	5	11	4	113	30
Ninth	12	5	14	6	3	1	9	3	26	13	11	6	4	3	14	5	6	1	15	7	16	8	12	3	142	61
Tenth	41	18	27	7	23	7	11	3	9	1	9	4	5	2	7	1	12	2	16	4	18	7	16	7	194	63
Eleventh	22	4	7	2	7	2	9	3	11	7	8	2	2	...	...	...	4	2	4	1	1	1	8	3	83	27
Twelfth	15	3	11	3	15	6	12	4	16	7	7	2	5	...	20	10	39	19	9	4	17	6	15	4	181	68
Thirteenth	20	3	2	...	12	4	7	3	14	4	9	3	1	...	7	2	7	1	6	...	13	3	12	1	110	24
Fourteenth	12	4	15	3	7	3	6	2	10	1	2	...	5	2	9	5	14	4	5	2	13	8	16	4	108	38
Fifteenth	17	5	7	3	13	2	11	3	9	3	14	4	9	8	3	..	7	3	7	3	9	...	9	3	115	37
Sixteenth	23	11	23	7	10	6	21	5	21	7	19	6	11	6	7	3	4	...	7	2	10	3	8	2	164	58
Seventeenth	18	3	29	9	17	5	24	12	17	7	15	2	21	8	11	4	8	2	5	2	14	7	11	5	190	66
Eighteenth	15	5	11	2	6	2	12	5	3	...	13	5	12	8	14	7	6	1	4	1	11	3	10	3	117	42
Nineteenth	11	4	9	...	15	7	8	2	12	5	8	3	4	1	8	...	2	1	13	3	13	2	13	2	116	30
Twentieth	13	2	6	2	21	7	11	3	13	4	12	3	2	2	3	1	1	1	7	3	8	4	14	6	111	38
Twenty-first	26	10	20	9	21	4	6	4	18	5	18	6	14	4	8	3	18	7	16	5	26	13	9	1	200	71
Twenty-second	15	3	29	8	9	...	7	...	12	4	7	1	13	3	13	5	15	3	34	12	34	5	37	7	225	51
Twenty-third	13	4	15	10	12	5	3	...	...	1	3	1	1	1	3	1	...	...	5	...	10	2	7	2	72	27
Twenty-fourth	6	3	3	...	3	1	1	...	1	...	1	...	...	...	...	...	6	4	4	...	2	1	6	3	33	12
Twenty-fifth	13	3	12	3	11	3	13	4	10	4	8	3	9	2	4	1	3	2	8	3	18	7	22	6	131	41
Total	430	150	337	118	286	94	241	87	283	93	234	73	161	69	193	70	205	72	250	86	307	108	291	84	3218	1104

TABLE LXVI.—DIPHTHERIA—1881.

Cases and Deaths, by Ages and Sexes.

	Males.	Females.	Under 1 year.	Under 2 years.	Under 3 years.	Under 4 years.	Under 5 years.	From 5 to 10 years.	From 10 to 15 years.	From 15 to 20 years.	From 20 to 40 years	From 40 to 60 years	Over 60 years.
Cases	1537	1681	96	257	344	357	1197	529	157	135	117	19	10
Deaths	533	571	41	158	176	161	379	128	33	17	8	1	2

TABLE LXVII.—SCARLET FEVER—1881.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1881.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	8	4	5	..	8	2	3	..	15	2	9	1	6	2	3	..	2	1	8	3	9	1	21	3	97	19
Second	3	..	2	1	5	1	4	..	6	1	9	1	6	3	1	..	..	2	4	2	10	1	5	1	55	13
Third	8	1	11	3	16	1	19	4	28	6	16	3	2	1	7	1	7	1	15	2	7	..	30	2	166	25
Fourth	13	5	9	1	16	1	7	2	6	1	8	..	1	..	2	..	8	2	2	..	12	..	15	2	99	14
Fifth	14	4	10	5	12	3	16	2	19	6	16	3	5	2	7	4	8	3	6	1	11	4	15	6	139	43
Sixth	18	..	15	2	29	4	36	5	26	9	39	6	20	8	37	6	32	8	38	13	44	14	31	8	365	83
Seventh	24	1	12	..	25	1	16	2	15	1	21	2	10	2	8	1	14	2	9	..	21	1	32	2	207	15
Eighth	18	4	23	8	12	1	11	2	12	..	3	1	3	1	7	2	11	4	4	1	8	1	40	8	152	33
Ninth	14	1	15	..	14	3	15	1	7	1	15	2	9	1	4	..	9	1	25	..	7	..	15	2	149	12
Tenth	17	2	19	5	18	1	29	4	29	3	21	4	12	..	8	..	14	2	13	1	24	7	25	2	229	31
Eleventh	8	3	13	1	14	3	17	5	14	3	16	3	6	..	11	..	3	1	23	2	19	2	20	6	164	29
Twelfth	19	4	18	4	23	4	20	8	23	5	10	3	12	1	24	3	16	4	14	..	22	7	22	9	224	52
Thirteenth	13	1	13	2	13	..	43	6	33	5	18	3	4	..	5	..	2	..	24	2	22	3	39	4	229	26
Fourteenth	12	..	11	4	13	1	16	4	16	5	11	3	5	1	7	3	21	3	12	..	17	1	32	..	173	25
Fifteenth	8	1	11	2	4	2	13	1	9	..	13	4	4	..	7	2	5	3	15	5	30	3	35	5	154	28
Sixteenth	27	5	27	8	15	2	13	3	24	4	18	2	17	3	24	5	14	2	13	1	21	4	33	5	246	44
Seventeenth	23	3	15	1	26	3	23	5	14	2	15	1	15	3	18	5	11	2	16	2	24	6	29	2	229	35
Eighteenth	20	2	7	1	18	5	11	2	9	3	5	..	12	..	6	1	7	1	14	1	24	..	18	3	151	19
Nineteenth	25	3	30	1	13	1	18	1	20	6	9	..	11	2	4	..	11	1	14	2	45	2	37	3	237	22
Twentieth	22	2	13	..	15	2	31	4	21	1	13	..	1	..	3	..	4	2	12	2	7	..	34	2	176	15
Twenty-first	31	6	23	2	27	2	28	3	10	1	11	..	22	4	10	2	16	1	19	1	28	5	33	5	248	32
Twenty-second	26	6	16	1	14	2	26	4	14	3	14	2	8	..	6	..	20	..	30	1	37	5	55	12	266	36
Twenty-third	30	3	21	3	15	..	11	..	8		5	..	5	1	1	..	5	..	4	..	11	..	24	1	140	8
Twenty-fourth	5	..	5	1	3	..	5	1	13	..	1	..	..	..	4	..	2	..	..	..	12	2	4	1	54	5
Twenty-fifth	31	2	12	..	21	2	19	3	10	..	10	..	15	1	15	..	10	1	17	..	10	1	25	2	195	12
Total	438	63	356	56	389	47	450	72	401	68	326	44	211	36	229	35	252	47	351	42	482	70	669	96	4,554	676

TABLE LXVIII.—SCARLET FEVER—1881.

Cases and Deaths, by Ages and Sexes.

	Males.	Females.	Under 1 year.	Under 2 years.	Under 3 years.	Under 4 years.	Under 5 years.	From 5 to 10 years.	From 10 to 15 years.	From 15 to 20 years.	From 20 to 40 years.	From 40 to 60 years.	Over 60 years.
Cases........	2163	2391	89	269	479	606	1529	1188	224	110	55	2	3
Deaths	318	358	27	79	113	139	177	104	22	6	7	1	1

TABLE LXIX.—TYPHOID FEVER—1881.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1881.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	1	...	...	...	1	...	1	...	1	1	1	1	...	...	...	...	1	...	1	...	2	1	3	...	12	4
Second	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	....	....
Third	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	1	...	2	...	5	....
Fourth	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	2	1
Fifth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	2	1	...	...	5	1
Sixth	1	...	1	...	...	...	2	1	1	...	1	1	...	...	1	1	3	3	1	...	3	1	3	2	17	9
Seventh	1	...	...	...	...	...	1	...	1	1	...	...	...	...	...	...	2	2	...	...	...	...	1	1	6	4
Eighth	...	...	1	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	3	....
Ninth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	1	1	1	...	3	2
Tenth	...	...	1	...	2	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	2	2	1	...	8	2
Eleventh	...	...	...	...	2	1	1	1	...	...	1	1	...	...	...	...	1	1	...	...	1	1	...	...	6	5
Twelfth	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	1	3	2
Thirteenth	...	...	2	1	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	3	2
Fourteenth	...	...	...	...	...	...	1	1	1	1	...	...	1	...	2	2	2	...	...	...	3	1	1	...	11	5
Fifteenth	...	...	...	...	...	1	...	...	...	...	1	...	...	...	1	...	3	1	2	...	...	...	...	...	7	2
Sixteenth	...	...	...	...	1	...	...	...	1	1	...	...	1	1	3	2	...	...	1	1	1	1	...	...	8	6
Seventeenth	1	1	...	...	...	...	...	...	1	...	2	2	1	1	1	1	3	2	4	2	4	...	3	...	20	9
Eighteenth	1	1	...	...	...	...	2	2	3	2	...	...	...	...	2	2	2	2	5	5	1	1	1	1	17	16
Nineteenth	...	...	1	1	...	...	1	...	1	...	1	1	...	...	...	...	...	...	5	1	1	...	1	...	12	3
Twentieth	...	...	...	...	...	...	1	1	...	...	1	1	...	...	...	...	...	...	3	2	3	1	1	1	9	6
Twenty-first	...	...	1	1	...	...	...	...	...	...	1	...	...	...	...	...	1	...	2	1	1	1	...	...	6	3
Twenty-second	...	...	1	...	...	1	...	...	...	...	...	...	...	...	1	1	2	2	...	...	...	...	2	1	7	5
Twenty-third	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1
Twenty fourth	1	...	...	...	...	1	...	...	...	...	1	1	...	...	...	...	...	...	...	...	5	1	...	...	8	3
Twenty-fifth	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	2	2
Total	8	4	8	3	11	6	11	6	11	6	12	8	5	2	12	10	21	14	28	12	33	14	21	8	181	93

TABLE LXX.—TYPHOID FEVER—1881.

Cases and Deaths, by Ages and Sexes.

	Males	Females.	Under 1 year	Under 2 years.	Under 3 years	Under 4 years	Under 5 years	From 5 to 10 years.	From 10 to 15 years.	From 5 to 20 years.	From 20 to 40 years	From 40 to 60 years	Over 60 years.
Cases...........	112	69	2	1	2		...	22	2	18	80	28	6
Deaths..........	61	32	2	1	2		...	6	6	9	44	17	5

TABLE LXXI.—CEREBRO-SPINAL MENINGITIS—1881.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		March		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1881.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1
Second	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1
Third	...	...	...	...	...	...	2	1	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	2
Fourth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fifth	...	...	...	...	7	5	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	8	6
Sixth	...	...	...	...	...	...	...	...	3	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	3
Seventh	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1
Eighth	...	...	1	1	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	2	2
Ninth	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Tenth	...	...	1	1	2	2	1	1	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6	6
Eleventh	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Twelfth	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1
Thirteenth	...	...	...	...	1	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	1
Fourteenth	1	1	...	...	1	1	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	3
Fifteenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sixteenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Seventeenth	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1
Eighteenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Nineteenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Twentieth	...	...	...	...	...	...	1	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	1
Twenty-first	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1
Twenty-second	...	...	...	...	...	...	...	...	1	1	1	1	...	...	...	...	...	...	...	...	...	...	...	...	2	2
Twenty-third	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Twenty-fourth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Twenty-fifth	...	...	...	...	1	1	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	2
Total	1	1	3	2	13	11	8	6	13	12	2	2	...	...	...	...	...	...	...	...	...	...	...	...	40	34

TABLE LXXII.—CEREBRO-SPINAL MENINGITIS—1881.

Cases and Deaths, by Ages and Sexes.

	Males.	Females.	Under 1 year.	Under 2 years.	Under 3 years.	Under 4 years.	Under 5 years.	From 5 to 10 years.	From 10 to 15 years.	From 15 to 20 years.	From 20 to 40 years.	From 40 to 60 years.	Over 60 years.
Cases...........	26	14	1	3	4	2	4	11	6	6	1	2	....
Deaths..........	17	17	1	3	3	2	4	9	5	5	2	....	....

TABLE LXXIII.—WHOOPING COUGH—1881.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1881.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths	Cases.	Deaths.	Cases.	Deaths.	Cases	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	2	2
Second	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	1	1
Third	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	1	1
Fourth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	1	..	..	..	..	..	..	2	2
Fifth	..	..	..	..	1	1	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	2	2
Sixth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	1	1
Seventh	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	1	1	..	..	..	..	2	2
Eighth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Ninth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Tenth	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
Eleventh	..	..	..	..	..	..	..	..	1	1	1	1	..	..	1	1	..	..	..	..	..	..	..	..	3	3
Twelfth	..	..	..	..	..	..	..	..	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2
Thirteenth	..	..	..	..	..	..	1	1	1	1	..	..	1	1	..	..	2	2	..	..	..	..	..	..	5	5
Fourteenth	1	1	1	1	..	..	..	..	..	..	2	2	..	..	1	1	1	1	1	1	..	..	..	..	7	7
Fifteenth	1	1	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	1	1	..	..	3	3
Sixteenth	..	..	1	1	..	..	..	..	1	1	..	..	4	4	3	3	2	2	..	..	..	..	..	..	11	11
Seventeenth	..	..	..	..	..	..	..	..	..	..	..	..	2	..	1	1	5	4	2	2	..	..	..	..	10	7
Eighteenth	1	1	1	1	..	..	..	..	..	..	..	..	3	3	1	1	1	1	..	..	2	2	..	..	9	9
Nineteenth	..	..	..	..	..	..	..	..	..	..	3	3	..	..	..	..	2	2	..	..	..	..	..	..	5	5
Twentieth	..	..	..	..	2	2	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	3	2
Twenty-first	..	..	..	..	1	1	1	1	1	1	2	1	3	3	5	5	1	1	..	..	..	..	..	..	14	13
Twenty-second	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	2	1
Twenty-third	1	1	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	2	2
Twenty-fourth	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
Twenty-fifth	..	..	1	1	..	..	..	..	1	1	..	..	1	1	5	5	1	1	..	..	..	..	..	..	9	9
Total	6	6	5	5	4	4	3	2	8	8	10	8	16	14	19	19	18	17	5	5	4	4	.	..	98	92

TABLE LXXIV.—WHOOPING COUGH—1881.

Cases and Deaths, by Ages and Sexes.

	Males.	Females.	Under 1 year.	Under 2 years.	Under 3 years.	Under 4 years.	Under 5 years.	From 5 to 10 years.	From 10 to 15 years.	From 15 to 20 years.	From 20 to 40 years.	From 40 to 60 years.	Over 60 years.
Cases	41	57	47	25	15	3	2	4	1	....	1	....	....
Deaths	39	53	46	23	14	2	1	4	1	....	1	....	....

TABLE LXXV.—MEASLES—1881.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1881.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	1	..	1	..	..	..	1	..	7	..	4	..	2	..	..	..	..	..	..	..	..	..	5	..	21	....
Second	..		1	..	..	..	..	..	1	..	1	..	2	..	6	3	..	..	1	..	..	..	1	..	13	3
Third	..	..	2	..	1	..	6	..	19	3	25	1	..	..	1	..	..	..	..	..	..	..	1	..	55	4
Fourth	2	..	1	..	2	..	4	..	8	..	6	..	5	..	5	1	..	..	..	..	..	..	4	..	37	1
Fifth	3	..	..	..	3	..	1	..	3	..	2	..	2	1	1	..	1	..	..	..	..	..	..	..	16	1
Sixth	3	..	2	..	4	..	4	..	8	1	2	..	1	1	3	..	..	..	..	..	2	..	..	..	29	2
Seventh	2	..	..	..	2	..	14	..	8	..	5	1	4	..	1	..	..	..	..	..	2	..	25	1	63	2
Eighth	..	..	1	..	..	..	..	..	1	..	1	1	..	..	..	..	..	..	..	..	..	..	6	..	9	1
Ninth	1	..	1	..	..	..	..	..	2	.	23	1	5	..	1	..	1	1	..	..	..	..	5	1	39	3
Tenth	2	1	..	..	..	..	12	..	28	1	1	1	9	1	5	..	..	..	..	..	..	..	2	1	59	5
Eleventh	..	..	..	..	..	..	1	..	15	..	18	..	7	..	1	..	..	..	..	..	..	..	..	..	42	....
Twelfth	8	2	..	..	3	2	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	12	4
Thirteenth	..	..	..	..	1	..	3	..	3	..	1	1	..	..	..	..	..	..	..	..	..	..	33	1	41	2
Fourteenth	..	..	1	..	1	..	5	2	11	1	8	1	..	..	1	1	1	1	.	..	..	..	1	..	29	5
Fifteenth	2	1	..	..	1	..	..	..	1	..	2	..	..	..	2	1	..	..	..	..	..	..	1	..	9	2
Sixteenth	2	1	..	..	..	..	1	1	1	..	6	..	18	3	8	5	2	1	2	1	1	..	9	..	50	12
Seventeenth	..	..	..	..	1	..	..	..	..	..	5	1	3	2	5	1	1	1	..	..	1	..	2	1	18	6
Eighteenth	..	..	..	..	..	..	..	..	2	..	4	..	4	1	1	..	..	..	..	..	..	..	1	..	12	1
Nineteenth	..	..	..	..	..	..	..	..	1	..	5	..	1	..	..	..	1	..	..	..	1	..	38	1	47	1
Twentieth	1	..	1	..	5	..	12	..	16	..	27	..	2	..	1	..	..	..	..	..	1	..	2	..	68	....
Twenty-first	1	..	..	..	5	..	..	..	3	..	8	..	4	..	5	..	12	..	2	..	18	..	44	1	102	1
Twenty-second	1	..	3	..	..	..	10	..	10	..	6	..	1	..	1	..	..	..	1	..	2	..	41	1	76	1
Twenty-third	..	..	1	..	..	..	4	..	1	..	3	..	1	..	..	..	..	..	..	..	2	..	16	..	28	1
Twenty-fourth	..	..	..	..	..	..	1	..	..	..	..	..	4	..	..	..	..	..	..	..	..	..	..	..	5	....
Twenty-fifth	1	1	1	1	3	..	2	..	7	..	5	..	4	..	1	1	..	..	..	..	..	..	2	..	26	3
Total	30	6	16	1	32	2	81	3	157	6	168	8	79	9	49	13	19	4	6	1	30	..	239	8	906	61

TABLE LXXVI.—MEASLES--1881.

Cases and Deaths, by Ages and Sexes.

	Males.	Females.	Under 1 year.	Under 2 years.	Under 3 years.	Under 4 years.	Under 5 years.	From 5 to 10 years.	From 10 to 15 years.	From 15 to 20 years.	From 20 to 40 years.	From 40 to 60 years.	Over 60 years.
Cases...........	438	468	46	63	84	91	83	407	69	18	42	2	1
Deaths..........	33	28	6	17	12	11	4	8	....	1	2	....	....

TABLE LXXVII.—TYPHUS FEVER—1881.

Cases and Deaths, by Months, in each Ward.

WARDS	Jan.		Feb.		March.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1881.	
	Cases.	Deaths.	Cases.	Deaths.	Cases	Deaths.	Cases	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	1	1
Second	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Third	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fourth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fifth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sixth	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	1	1
Seventh	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Eighth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ninth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Eleventh	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...
Twelfth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Thirteenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fourteenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fifteenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sixteenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Seventeenth	1	...	1	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...
Eighteenth	...	...	...	...	1	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	2	1
Nineteenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Twentieth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Twenty-first	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Twenty-second	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Twenty-third	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Twenty-fourth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Twenty-fifth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total	1	...	1	...	3	1	...	...	...	...	1	...	2	1	...	...	...	...	...	...	...	...	1	1	9	3

TABLE LXXVIII—TYPHUS FEVER—1881.

Cases and Deaths, by Ages and Sexes.

	Males	Females.	Under 1 year	Under 2 years	Under 3 years.	Under 4 years.	Under 5 years	From 5 to 0 years	From 0 to 5 years	From 5 to 20 years	From 20 to 40 years.	From 40 to 60 years	Over 60 years.
Cases............	4	5		....	....	....	....	....	2	1	5		...
Deaths..........	1	2		....	....	....	...	....			2	1	...

TABLE LXXIX.—ALL CONTAGIOUS DISEASES—1881.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1881.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	23	7	8	1	19	7	19	6	35	5	22	5	9	2	3	...	6	3	14	3	16	1	34	5	202	45
Second	19	8	12	7	15	3	4	...	15	1	14	1	9	3	16	6	10	6	11	6	17	4	15	5	158	50
Third	28	6	23	8	25	4	41	13	62	14	44	4	9	3	15	3	8	2	21	2	10	1	45	4	331	64
Fourth	32	11	21	3	24	4	23	4	21	4	25	4	11	1	10	2	11	5	13	...	17	2	27	5	235	45
Fifth	44	11	23	7	28	11	23	3	31	7	27	6	4	5	17	5	14	4	19	7	14	6	19	7	273	79
Sixth	59	20	50	21	62	13	69	19	66	16	64	12	34	15	66	18	51	15	68	24	72	22	46	13	707	208
Seventh	45	10	32	7	45	7	34	4	34	7	39	8	32	13	25	6	24	5	25	9	43	6	75	9	453	91
Eighth	29	6	42	12	21	3	19	3	25	..	29	5	11	2	14	3	24	10	18	3	17	6	57	12	306	65
Ninth	28	6	31	6	17	4	24	4	35	14	51	9	20	5	19	5	18	3	41	7	25	9	34	6	343	78
Tenth	63	22	49	13	50	10	54	8	52	5	36	9	27	3	20	1	26	4	29	5	44	14	45	10	495	104
Eleventh	33	7	20	3	24	6	28	9	45	12	44	7	15	1	15	1	8	4	28	3	22	4	28	9	310	66
Twelfth	42	9	33	7	47	13	33	13	46	14	25	6	19	1	44	13	56	20	24	4	40	13	39	14	448	127
Thirteenth	33	4	17	3	27	5	55	10	54	11	35	7	8	1	14	3	11	3	31	2	36	6	85	6	406	61
Fourteenth	26	6	28	8	23	5	28	9	41	11	32	7	23	5	23	12	39	9	19	3	37	10	46	4	365	89
Fifteenth	31	8	21	5	19	4	25	4	20	3	37	8	15	8	14	3	15	7	26	8	41	4	48	9	312	71
Sixteenth	52	17	52	16	29	9	57	9	52	14	44	9	54	17	46	18	22	5	28	5	44	8	57	8	537	135
Seventeenth	43	7	46	10	48	9	47	17	35	9	44	6	43	14	36	12	28	11	27	8	43	13	47	8	487	124
Eighteenth	37	9	22	4	25	8	26	9	18	5	27	5	31	12	25	11	20	5	26	8	45	8	37	8	339	92
Nineteenth	36	7	40	2	31	8	29	3	38	11	29	7	16	3	12	...	16	4	33	6	62	4	91	6	433	61
Twentieth	36	4	27	2	43	11	57	8	32	5	55	4	7	2	7	1	5	3	22	7	20	5	51	9	362	61
Twenty-first	58	16	46	12	55	7	35	8	32	7	41	7	49	11	30	10	47	9	40	7	76	19	89	8	598	121
Twenty-second	45	10	52	10	28	3	46	5	38	7	29	3	23	3	21	6	37	5	65	13	74	11	136	17	594	93
Twenty-third	45	9	37	13	27	5	18	..	9	1	18	2	13	3	7	3	7	...	9	...	25	3	48	3	263	42
Twenty-fourth	13	4	9	1	8	..2	7	1	14	1	3	1	7	1	4	...	8	4	6	...	20	4	10	4	109	23
Twenty-fifth	46	7	26	5	36	6	37	8	29	6	24	3	31	4	26	7	14	4	27	3	51	8	51	8	398	69
Total	946	231	761	186	776	167	838	177	879	190	839	145	530	138	529	149	525	150	670	143	911	191	1260	197	9464	2064

This total does not include 107 deaths from smallpox which occurred in the County Hospital, of cases sent from Brooklyn.

TABLE LXXX.—SMALLPOX—1882.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1882.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....
Second	4	..	2	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	....
Third	8	1	9	2	9	1	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	28	4
Fourth	1	..	..	..	1	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	....
Fifth	4	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	6	....
Sixth	2	..	1	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	....
Seventh	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	....
Eighth	1	..	..	..	2	..	1	1	..	..	..	..	1	..	5	..	1	..	..	..	..	..	..	..	11	1
Ninth	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	....
Tenth	2	..	3	..	..	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	1
Eleventh	1	..	..	..	..	..	4	..	3	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	9	1
Twelfth	4	1	10	..	3	..	5	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	22	2
Thirteenth	1	..	7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	....
Fourteenth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Fifteenth	2	..	2	..	1	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	...
Sixteenth	5	..	1	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	....
Seventeenth	..	..	5	..	1	..	2	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	4	1	13	1
Eighteenth	6	..	..	..	3	..	1	..	..	..	1	..	3	..	..	..	..	..	..	..	..	..	..	..	14	....
Nineteenth	1	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	....
Twentieth	2	..	1	..	1	..	1	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	....
Twenty-first	1	..	2	1	2	..	..	..	1	..	..	..	4	..	..	..	..	..	..	..	..	..	..	..	10	1
Twenty-second	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	....
Twenty-third	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	...
Twenty-fourth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Twenty-fifth	1	..	..	..	..	..	2	1	..	..	1	1	2	..	..	..	..	..	..	..	..	..	..	..	6	2
Total	51	2	45	3	26	2	24	3	14	1	5	1	10	..	5	..	1	..	..	..	..	..	4	1	185	13

TABLE LXXXI.—SMALLPOX IN 1882, BY WARDS.

Cases remaining in City and Cases sent to Hospital, with Deaths in each class of Cases.

WARDS.	In City.		Sent to Hospital		Total for 1882.	
	Cases.	Deaths.	Cases.	Deaths.	Cases	Deaths.
First	1				1	
Second			7	3	7	3
Third	10	4	18	5	28	9
Fourth	3		1	1	4	1
Fifth	1		5	1	6	1
Sixth			6	2	6	2
Seventh			2		2	
Eighth	1	1	10	3	11	4
Ninth			2	1	2	1
Tenth	1	1	6	4	7	5
Eleventh	2	1	7	3	9	4
Twelfth	5	2	17	5	22	7
Thirteenth	1		7	5	8	5
Fourteenth						
Fifteenth			8	2	8	2
Sixteenth	2		6	3	8	3
Seventeenth	1	1	12	1	13	2
Eighteenth	2		12	5	14	5
Nineteenth			3	1	3	1
Twentieth	3		4	1	7	1
Twenty-first	1	1	9	5	10	6
Twenty-second	1		1	1	2	1
Twenty-third	1				1	
Twenty-fourth						
Twenty-fifth	3	2	3		6	2
Total	39	13	146	52	185	65

TABLE LXXXII.—SMALLPOX—1882.

Cases and Deaths in City and Hospital each Month.

MONTHS.	In City.		Sent to Hospital		Total for 1882.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
January	13	2	38	14	51	16
February	9	3	36	16	45	19
March	6	2	20	10	26	12
April	5	3	19	7	24	10
May	1	2	13	4	14	6
June	2	....	3	....	5	....
July	2	....	8	1	10	1
August	....	....	5	....	5	....
September	....	....	1	....	1	....
October	....	....	....	....	....	....
November	....	....	....	....	....	....
December	1	1	3	....	4	1
Total	39	13	146	52	185	65

TABLE LXXXIII.—SMALLPOX—1882.

Cases and Deaths, by Ages and Sexes.

	Males.	Females.	Under 1 Year	Under 2 Years.	Under 3 Years.	Under 4 Years.	Under 5 Years.	From 5 to 10 Years.	From 10 to 15 Years.	From 15 to 20 Years	From 20 to 40 Years.	From 40 to 60 Years.	Over 60 Years.
Cases retained in City..........	23	16	1	1	2	2	1	8	3	5	12	4	....
Cases fatal in City..........	9	4	1	....	1	....	....	3	....	1	6	1	....
Cases sent to Hospital......	76	70	5	6	8	8	7	19	13	8	60	9	3
Cases fatal in Hospital.....	28	24	2	4	2	4	5	8	2	2	18	3	2

TABLE LXXXIV.—SCARLET FEVER—1882.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		Mar.		April		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec		Total, 1882.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	28	5	19	2	11	3	9	3	13	1	4	1	3	1	1	...	...	...	...	...	5	...	7	...	100	16
Second	10	4	8	...	8	3	11	5	2	1	2	...	2	...	...	...	1	...	1	...	1	...	...	...	46	13
Third	45	10	25	6	29	9	29	5	18	4	11	1	5	1	1	...	2	...	6	1	9	1	11	1	191	40
Fourth	21	4	20	4	19	3	17	1	9	1	7	2	4	...	1	...	4	...	5	1	3	...	7	3	117	19
Fifth	16	2	22	5	37	8	10	4	9	2	7	4	3	3	1	1	4	1	3	...	3	...	3	...	118	30
Sixth	26	5	31	11	30	6	23	4	26	9	10	5	3	1	6	1	5	1	8	1	1	...	17	7	186	51
Seventh	44	8	62	9	51	4	49	5	57	4	30	11	13	3	10	...	2	...	1	...	8	2	6	...	333	46
Eighth	29	7	15	1	15	3	27	4	20	3	16	2	12	3	4	1	4	1	9	2	17	6	34	11	202	44
Ninth	11	4	21	2	17	4	20	6	21	3	3	1	7	3	1	1	2	...	1	...	10	3	5	1	119	28
Tenth	23	5	33	7	22	4	29	7	24	6	34	10	5	2	1	...	5	...	9	2	16	4	23	4	224	51
Eleventh	29	3	44	9	24	9	16	6	16	5	20	5	6	2	5	...	6	1	2	...	9	1	16	3	193	44
Twelfth	22	10	21	7	22	6	17	4	20	6	13	5	4	...	7	1	17	4	4	...	11	1	12	3	170	47
Thirteenth	14	...	20	1	35	2	23	4	26	2	18	1	3	...	1	...	7	1	8	1	16	3	23	3	194	18
Fourteenth	18	4	23	2	22	6	19	9	21	6	10	3	5	2	2	...	7	1	7	1	11	4	6	1	151	39
Fifteenth	17	3	20	5	22	2	26	7	17	4	10	...	8	1	3	...	1	1	10	2	12	1	2	...	158	26
Sixteenth	23	4	33	4	46	10	44	11	31	4	17	4	5	2	5	...	6	1	7	2	2	...	10	3	229	45
Seventeenth	35	4	37	9	23	5	34	10	35	9	23	2	12	...	4	1	5	...	9	1	9	1	24	1	250	43
Eighteenth	27	6	5	1	21	2	22	8	31	7	12	5	23	8	4	...	1	...	4	1	8	1	5	2	163	41
Nineteenth	25	5	35	8	37	9	24	5	42	7	15	4	4	1	2	...	2	...	19	3	35	6	13	2	253	50
Twentieth	35	6	39	4	47	10	34	8	42	1	19	4	5	...	4	...	...	...	3	...	3	1	11	2	242	36
Twenty-first	20	4	37	6	29	4	38	7	31	8	32	5	8	4	5	3	3	1	7	...	11	2	14	3	235	47
Twenty-second	46	11	29	6	45	4	18	2	23	4	19	4	12	2	14	2	9	1	9	5	21	1	26	5	271	47
Twenty-third	37	5	27	4	23	7	22	2	10	2	11	1	10	...	4	...	2	1	9	...	11	3	18	5	184	30
Twenty fourth	8	...	16	2	14	1	4	...	7	2	11	1	1	...	4	...	2	...	...	...	1	...	2	...	70	6
Twenty-fifth	33	8	11	2	40	5	21	5	29	6	10	...	8	2	10	1	9	3	7	...	5	1	17	2	200	35
Total	642	127	653	117	689	129	586	132	580	107	364	81	171	41	100	12	116	18	148	23	238	42	312	62	4,599	892

TABLE LXXXV.—SCARLET FEVER—1882.

Cases and Deaths, by Ages and Sexes.

	Males.	Females.	Under 1 year.	Under 2 years.	Under 3 years.	Under 4 years.	Under 5 years.	From 5 to 10 years.	From 10 to 15 years.	From 15 to 20 years.	From 20 to 40 years	From 40 to 60 years.	Over 60 years.
Cases..........	2382	2217	99	266	532	606	638	1773	437	99	139	8	2
Deaths..........	465	427	34	70	164	156	146	257	40	6	16	2	1

TABLE LXXXVI.—DIPHTHERIA—1882.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1882.	
	Cases.	Deaths.	Cases.	Deaths.	Cases	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	9	1	5	2	7	3	5	...	7	1	1	...	4	2	1	...	4	1	1	1	5	1	2	...	51	15
Second	7	1	1	1	2	2	1	1	...	...	2	2	1	...	...	...	1	...	...	...	3	1	1	...	19	9
Third	15	4	10	3	8	3	4	1	5	1	2	...	4	...	2	...	2	1	3	...	1	1	6	3	62	17
Fourth	4	1	5	2	8	3	2	...	7	1	3	...	3	1	1	1	2	1	2	1	1	...	2	1	40	12
Fifth	6	1	4	...	3	...	3	2	12	7	1	3	3	1	3	1	6	5	...	...	1	...	5	3	47	23
Sixth	19	6	15	5	5	3	13	4	...	3	5	...	...	...	1	...	5	3	3	2	11	7	11	4	88	37
Seventh	16	3	12	4	12	3	16	3	4	...	8	2	5	1	5	2	5	2	1	1	1	...	3	...	88	21
Eighth	11	5	9	1	13	1	12	5	9	3	4	1	9	2	5	2	11	5	19	4	27	8	16	3	145	40
Ninth	7	3	2	1	8	1	9	3	8	6	5	2	2	1	1	1	4	2	2	...	5	1	1	1	54	22
Tenth	31	10	6	1	12	2	8	2	4	3	10	3	6	2	4	1	7	...	11	2	11	4	9	7	119	37
Eleventh	10	1	5	2	6	2	1	1	2	...	1	...	2	2	3	1	2	1	6	...	3	1	5	2	46	13
Twelfth	18	5	8	2	6	2	6	...	6	3	...	...	...	...	3	1	4	1	5	3	14	9	3	1	73	27
Thirteenth	8	2	2	1	5	1	7	3	2	1	3	...	2	...	8	2	3	2	3	1	8	1	5	1	56	14
Fourteenth	19	10	9	3	12	4	2	1	6	3	3	2	1	1	6	2	8	4	5	4	...	...	...	...	71	34
Fifteenth	12	6	6	4	5	1	5	1	8	4	7	2	4	4	1	...	5	...	4	...	8	2	8	2	73	26
Sixteenth	21	6	13	4	10	3	8	5	13	6	9	3	9	7	4	...	12	2	3	2	13	1	13	8	128	47
Seventeenth	21	6	12	3	13	4	5	2	8	3	...	...	1	1	2	1	3	1	3	1	7	4	6	3	81	29
Eighteenth	10	5	4	2	5	2	13	7	12	5	1	...	4	1	8	3	3	1	9	4	4	...	2	1	75	31
Nineteenth	14	2	11	3	7	1	5	2	5	2	4	4	3	2	1	1	2	1	8	1	6	2	8	3	74	24
Twentieth	14	9	9	2	11	2	7	2	15	3	5	3	3	...	2	1	4	1	10	8	1	1	7	2	88	34
Twenty-first	25	5	21	7	8	1	5	2	6	3	7	2	6	1	5	...	2	1	7	2	3	1	4	1	99	26
Twenty-second	24	5	14	5	13	5	14	4	18	1	5	2	1	1	3	2	...	3	2	1	10	1	8	2	112	32
Twenty-third	24	5	4	1	8	3	7	5	3	1	3	...	1	...	2	...	3	1	1	...	5	3	...	...	61	19
Twenty fourth	3	1	1	1	...	...	3	1	1	1	4	1	...	...	...	...	...	...	1	...	1	1	4	1	18	7
Twenty-fifth	23	8	4	3	20	9	13	5	7	2	1	...	3	...	9	4	3	1	9	1	5	...	8	2	105	35
Total	371	111	192	63	207	61	174	62	168	63	94	32	77	30	80	26	101	40	118	39	154	50	137	51	1,873	631

TABLE LXXXVII.—DIPHTHERIA—1882.

Cases and Deaths, by Ages and Sexes.

	Males.	Females.	Under 1 year.	Under 2 years.	Under 3 years.	Under 4 years.	Under 5 years.	From 5 to 10 years.	From 10 to 15 years.	From 15 to 20 years.	From 20 to 40 years.	From 40 to 60 years.	Over 60 years.
Cases	898	975	54	166	174	222	168	603	216	84	142	40	4
Deaths	286	345	27	99	84	94	58	206	37	11	7	8	....

TABLE LXXXVIII—MEASLES—1882.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1882.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	2	..	4	..	12	..	11	..	19	1	18	2	7	4	2	1	..	..	..	..	..	..	1	..	76	8
Second	1	..	2	..	2	..	5	..	3	..	6	1	6	..	..	..	..	..	..	..	..	..	..	..	25	1
Third	5	..	17	1	19	..	14	1	18	1	11	..	7	2	2	1	..	..	..	..	..	..	.	..	93	6
Fourth	1	..	6	1	18	..	6	..	13	1	12	..	4	..	..	..	..	..	..	..	..	..	..	..	60	2
Fifth	2	..	2	..	4	1	10	..	19	3	7	1	4	..	1	..	..	..	..	..	..	..	..	..	49	5
Sixth	1	1	2	1	9	2	26	2	81	9	34	7	6	2	6	1	..	..	..	..	1	..	..	..	166	25
Seventh	28	2	29	3	28	1	22	1	65	1	10	1	1	..	..	..	..	..	..	..	..	..	1	..	184	9
Eighth	14	1	15	..	14	..	4	1	6	1	10	..	3	..	..	..	..	.	..	..	..	..	..	..	66	3
Ninth	9	..	7	1	13	..	9		5	1	12	1	1	..	..	..	..	..	..	..	..	..	..	..	56	3
Tenth	1	..	14	2	10	2	49	5	63	1	31	2	7	1	1	1	..	..	..	..	1	..	1	..	178	14
Eleventh	6	..	7	..	9	..	9	2	12	..	13	..	6	1	..	..	..	..	..	..	..	..	2	..	64	3
Twelfth	..	..	1	..	2	1	15	1	39	6	18	4	5	3	..	..	1	..	..	..	..	..	..	..	81	15
Thirteenth	119	3	37	..	21	2	23	2	6	..	15	..	2	..	..	..	..	..	..	..	..	..	..	..	223	7
Fourteenth	19	2	27	..	41	5	21	3	6	..	7	..	2	..	2	..	..	..	2	..	..	..	1	..	128	10
Fifteenth	29	..	31	2	45	4	11	1	6	1	5	2	2	..	..	..	..	..	..	..	1	..	..	..	130	10
Sixteenth	36	1	31	1	21	1	7	3	9	..	19	..	5	..	5	1	3	..	..	..	..	..	1	..	137	7
Seventeenth	2	1	25	..	33	..	10	..	24	..	9	2	5	2	..	..	..	..	1	..	..	..	2	..	111	5
Eighteenth	13	..	11	2	13	1	4	..	4	..	2	1	1	..	1	..	..	.	..	..	..	..	..	..	49	4
Nineteenth	66	2	17	..	8	..	3	2	8	..	8	..	1	..	..	..	..	..	1	..	..	..	..	..	112	4
Twentieth	12	..	14	..	13	..	14	..	22	..	24	..	15	..	2	..	..	..	..	..	..	..	1	..	117	....
Twenty-first	31	..	14	..	16	1	1	..	15	1	7	..	3	..	4	..	..	..	3	..	..	..	2	..	96	2
Twenty-second	66	6	7	..	16	..	12	..	12	1	9	..	7	2	..	..	..	..	..	..	1	..	1	..	131	9
Twenty-third	36	..	18	..	7	.	12	.	22	2	12	4	2	..	1	..	..	..	..	..	..	..	..	..	110	6
Twenty-fourth	1	..	..	..	2	..	21	1	20	3	16	1	..	..	..	..	..	..	..	..	..	..	..	..	60	5
Twenty-fifth	27	..	15	1	30	..	39	2	39	..	10	1	5	1	..	..	2	..	..	..	1	..	..	..	168	5
Total	527	19	353	15	406	21	358	27	536	33	325	30	107	18	27	5	6	..	7	..	5	..	13	..	2670	168

TABLE LXXXIX.—MEASLES—1882.

Cases and Deaths, by Ages and Sexes.

	Males.	Females.	Under 1 year.	Under 2 years.	Under 3 years.	Under 4 years.	Under 5 years.	From 5 to 10 years.	From 10 to 15 years.	From 15 to 20 years.	From 20 to 40 years.	From 40 to 60 years.	Over 60 years.
Cases...........	1292	1378	123	224	251	324	191	1261	180	45	70	1	....
Deaths..........	82	86	26	45	25	27	18	23	2	....	1	1	....

TABLE XC.—TYPHOID FEVER—1882.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1882.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	2	1	4	1
Second	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	1	1	1	1	3	3
Third	1	1	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	3	2
Fourth	...	...	1	1	...	...	...	...	1	...	1	1	...	...	...	...	...	...	...	...	1	...	...	...	4	2
Fifth	...	...	...	...	1	...	...	...	...	...	1	1	...	...	...	...	1	1	...	...	...	...	1	1	4	3
Sixth	2	2	...	...	...	...	3	3	5	5	...	...	...	...	2	...	4	3	1	1	...	1	2	2	19	17
Seventh	2	1	...	...	1	...	1	1	1	1	1	1	...	...	1	1	2	3	1	1	1	...	...	...	11	9
Eighth	...	...	...	...	1	...	1	...	...	...	1	...	...	...	...	...	1	1	...	...	...	...	...	...	4	1
Ninth	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Tenth	2	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	5	2
Eleventh	...	...	...	...	1	...	...	...	...	...	...	...	...	...	3	2	1	1	...	1	...	1	...	...	5	5
Twelfth	...	...	...	...	1	1	1	1	1	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	4	3
Thirteenth	1	1	...	...	1	...	...	...	...	...	...	...	...	...	1	1	1	1	...	...	...	...	...	...	4	3
Fourteenth	...	...	...	...	1	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	3	...
Fifteenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	2	...	...	...	...	1	...	3	2
Sixteenth	...	...	...	...	...	...	1	...	3	2	...	...	...	...	1	1	2	1	2	1	1	1	1	1	11	7
Seventeenth	...	...	...	...	...	...	...	...	...	...	...	...	1	1	1	...	...	...	4	3	2	...	3	2	11	6
Eighteenth	2	1	1	1	1	1	1	...	1	1	...	...	...	...	...	...	7	2	1	1	1	2	3	3	18	12
Nineteenth	...	...	1	1	1	...	...	...	...	...	...	...	1	...	1	...	1	...	1	1	...	...	1	...	7	2
Twentieth	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	3	2	1	1	...	...	5	4
Twenty-first	2	1	1	...	1	1	1	1	1	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	7	4
Twenty-second	1	1	...	...	1	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	4	1
Twenty-third	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	2	...
Twenty-fourth	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	1	1	1	1	...	...	3	3
Twenty-fifth	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	1	3	1
Total	15	10	5	3	14	5	10	6	14	11	5	3	4	1	13	6	24	15	18	12	11	9	15	12	148	93

TABLE XCI.—TYPHOID FEVER—1882.

Cases and Deaths, by Ages and Sexes.

	Males.	Females.	Under 1 year.	Under 2 years.	Under 3 years.	Under 4 years.	Under 5 years.	From 5 to 10 years.	From 10 to 15 years.	From 15 to 20 years.	From 20 to 40 years.	From 40 to 60 years.	Over 60 years.
Cases	84	64	....	1	1	1	2	11	20	18	58	28	8
Deaths	50	43	....	1	1	....	....	5	9	11	43	17	6

NOTE.—TYPHUS FEVER—1882.

One case of Typhus Fever in the Seventeenth Ward, in the month of January. One case and death in the Sixth Ward, St. Peter's Hospital, in the month of June.

TABLE XCII.—WHOOPING COUGH—1882.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1882.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	..	..	1	1	..	..	..	..	1	1	2	1	..	1	2	1	1	1	..	..	..	..	1	1	9	7
Second	..	..	..	..	1	..	..	..	1	..	1	1	..	..	2	2	..	..	2	2	1	1	2	2	10	8
Third	1	1	..	..	2	2	..	..	1	1	..	..	2	2	1	1	..	..	..	..	..	..	1	1	8	8
Fourth	..	..	..	..	..	..	..	..	1	1	1	1	3	3	1	1	..	..	..	..	1	1	1	1	8	8
Fifth	1	1	..	..	2	2	2	2	2	2	2	2	4	4	2	2	4	4	..	..	..	..	..	..	19	19
Sixth	2	2	1	1	2	2	2	2	3	3	2	2	5	5	2	2	..	..	3	3	..	..	..	..	22	22
Seventh	..	..	..	..	..	..	2	2	..	..	..	..	2	2	2	2	4	4	..	..	..	..	..	..	10	10
Eighth	..	..	..	..	..	..	1	1	..	..	1	1	..	..	..	..	..	..	..	..	..	..	1	1	3	3
Ninth	1	1	1	1	..	..	..	..	1	1	..	..	2	2	3	3	..	..	..	..	..	..	..	.	8	8
Tenth	..	..	..	..	1	1	1	1	1	1	2	2	2	2	3	3	1	1	2	2	..	..	..	..	13	13
Eleventh	..	..	..	..	1	1	..	..	..	..	1	1	1	1	1	1	..	..	..	..	..	..	..	..	4	4
Twelfth	..	..	..	..	1	1	..	..	5	5	1	1	4	4	6	6	7	7	..	..	..	..	..	..	24	24
Thirteenth	..	..	..	..	1	1	1	1	..	..	2	2	..	..	2	2	1	1	..	..	..	..	..	..	7	7
Fourteenth	1	1	..	..	..	..	1	1	4	4	..	..	2	2	1	1	2	2	1	1	1	1	1	1	14	14
Fifteenth	..	..	1	1	..	..	1	1	..	..	..	..	..	..	1	1	1	1	..	..	..	..	..	..	4	4
Sixteenth	1	1	..	..	2	2	2	2	2	2	..	..	2	2	3	3	1	1	1	1	2	2	..	..	16	16
Seventeenth	..	..	..	..	1	1	1	1	4	4	3	3	2	2	2	..	3	3	1	1	..	..	1	1	18	16
Eighteenth	1	1	..	..	1	1	..	..	..	..	..	..	2	2	3	3	..	..	1	1	1	1	..	..	9	9
Nineteenth	..	..	..	..	..	..	..	..	2	2	1	1	1	1	3	3	1	..	..	..	..	..	..	..	8	7
Twentieth	..	..	2	2	1	1	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	4	4
Twenty-first	2	1	..	..	..	..	2	2	2	2	2	2	..	2	2	1	1	..	1	1	..	..	..	..	12	11
Twenty-second	2	1	1	1	..	..	1	..	2	2	2	2		1	1	1	..	..	..	..	1	1	..	..	10	9
Twenty-third	..	..	..	..	..	..	..	..	1	..	2	2	..	..	1	1	1	1	1	1	..	..	..	..	6	5
Twenty-fourth	..	..	..	..	..	..	..	..	..	..	1	1	..	..	2	2	..	..	..	..	..	..	..	..	3	3
Twenty-fifth	..	..	..	..	1	1	1	1	1	1	1	1	1	1	2	2	2	2	..	..	..	..	..	..	9	9
Total	12	10	7	7	17	16	18	17	34	32	28	27	35	39	48	44	30	28	13	13	7	7	8	8	258	248

TABLE XCIII.—WHOOPING COUGH—1882.

Cases and Deaths, by Ages and Sexes.

	Males.	Females.	Under 1 year.	Under 2 years.	Under 3 years.	Under 4 years.	Under 5 years.	From 5 to 10 years.	From 10 to 15 years.	From 15 to 20 years.	From 20 to 40 years.	From 40 to 60 years.	Over 60 years.
Cases..........	120	138	87	81	39	17	10	12	5	3	4	....	....
Deaths..........	116	132	85	80	38	16	10	12	3	3	1	....	....

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1882.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	42	8	29	5	30	6	25	3	40	4	23	3	14	7	6	2	5	2	2	1	10	1	13	2	239	44
Second	22	5	13	1	13	6	18	7	7	2	12	4	11	2	3	3	2	..	3	2	6	3	4	3	114	38
Third.	75	18	61	12	68	16	47	7	44	7	24	1	18	5	5	1	4	1	10	1	10	2	18	5	384	76
Fourth.	27	6	32	8	46	6	26	1	31	3	24	4	14	4	3	2	6	1	7	2	6	1	10	5	232	43
Fifth.	28	4	30	7	46	10	24	7	43	14	19	11	14	8	7	4	16	11	3	..	4	2	9	4	243	82
Sixth.	52	18	54	22	48	16	70	14	113	27	51	14	11	5	17	4	14	7	15	7	13	7	30	13	488	154
Seventh.	91	14	103	16	93	8	90	14	127	6	49	15	20	5	18	5	13	9	3	2	10	2	10	..	627	96
Eighth.	55	13	39	2	45	4	46	12	35	7	32	4	25	5	14	3	17	7	28	6	44	14	51	15	431	92
Ninth.	29	8	34	6	40	5	38	9	35	12	21	4	11	5	5	5	6	2	3	..	15	4	6	2	243	62
Tenth.	59	17	57	10	45	9	92	15	95	13	78	18	20	7	9	5	14	1	23	6	28	8	33	11	553	120
Eleventh.	46	4	56	10	41	12	34	9	33	6	36	6	15	6	12	4	9	3	8	1	12	3	23	5	335	69
Twelfth.	44	16	40	9	35	11	44	7	71	20	31	9	14	7	17	9	29	12	9	3	26	11	15	4	375	118
Thirteenth....	143	6	66	2	63	6	54	10	34	3	38	3	7	2	10	3	12	5	11	2	24	4	28	4	490	50
Fourteenth. .	57	17	59	5	76	15	44	14	37	13	20	5	10	4	11	3	17	7	15	6	12	5	8	2	366	96
Fifteenth.	61	9	60	12	73	7	43	10	34	9	22	4	14	5	5	2	9	4	14	2	21	3	11	2	367	69
Sixteenth	86	12	78	9	79	16	64	21	58	14	45	7	20	10	18	5	24	5	13	6	18	4	25	12	528	121
Seventeenth...	58	11	79	12	71	10	52	13	71	16	36	7	21	6	9	5	12	5	18	6	18	5	42	8	487	104
Eighteenth....	59	13	21	6	44	7	41	15	48	14	16	6	33	11	15	5	10	3	15	7	14	4	10	6	326	97
Nineteenth. ..	106	9	64	12	55	10	32	9	57	11	28	9	10	4	6	3	5	2	29	5	41	8	22	5	455	87
Twentieth.	63	15	65	8	73	13	56	10	82	5	49	8	23	..	8	1	4	1	16	10	5	3	19	4	463	78
Twenty-first. .	81	11	75	14	56	7	48	12	54	13	46	7	22	5	16	5	6	3	18	3	14	3	21	4	457	87
Twenty-second	141	24	51	12	75	9	45	6	53	6	34	6	20	5	19	5	9	4	11	6	33	3	35	7	526	93
Twenty-third .	98	10	49	5	39	10	41	7	36	6	28	7	13	..	8	1	7	3	11	1	16	6	18	5	364	61
Twenty-fourth	12	1	17	3	17	2	28	2	28	6	31	3	1	..	6	2	2	..	2	1	3	2	6	1	153	23
Twenty-fifth. .	85	16	30	6	91	15	76	13	75	8	22	2	19	4	21	7	16	6	17	1	12	1	25	6	489	85
Total.	1620	285	1262	214	1362	236	1178	247	1341	245	815	137	400	122	268	94	278	104	304	87	415	109	492	135	9735	2045

TABLE XCV.—SMALLPOX—1883.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1883.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...
Second	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Third	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fourth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fifth	...	...	...	...	1	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	1
Sixth	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Seventh	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Eighth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ninth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tenth	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...
Eleventh	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Twelfth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Thirteenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fourteenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fifteenth	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Sixteenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Seventeenth	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...
Eighteenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Nineteenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Twentieth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Twenty-first	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Twenty-second	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Twenty-third	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Twenty-fourth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Twenty-fifth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total	1	...	2	...	4	1	3	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	12	1

TABLE XCVI.—SMALLPOX—1883.

Cases and Deaths in City and Hospital, each Month.

MONTHS.	In City.		Sent to Hospital		Total for 1883.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
January			1		1	
February			2		2	
March	1	1	3		4	1
April			2		2	
May	1		2	2	3	2
June						
July						
August						
September						
October						
November						
December						
Total	2	1	10	2	12	3

TABLE XCVII.—SMALLPOX IN 1883, BY WARDS.

Cases remaining in City and Cases sent to Hospital, with Deaths in each Class of Cases.

WARDS.	IN CITY.		SENT TO HOSPITAL		TOTAL FOR 1883.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	2		2		2	
Second						
Third						
Fourth	1		1	1	1	1
Fifth	2	1	1	1	2	2
Sixth						
Seventh						
Eighth						
Ninth						
Tenth	2		2		2	
Eleventh	1		1		1	
Twelfth						
Thirteenth						
Fourteenth						
Fifteenth	1				1	
Sixteenth						
Seventeenth	2		2		2	
Eighteenth						
Nineteenth						
Twentieth						
Twenty-first	1		1		1	
Twenty-second						
Twenty-third						
Twenty-fourth						
Twenty-fifth						
Total	12	1	10	2	12	3

TABLE XCVIII.—SMALLPOX—1883.

Cases and Deaths, by Ages and Sexes.

	Males.	Females.	Under 1 Year.	Under 2 Years.	Under 3 Years.	Under 4 Years.	Under 5 Years.	From 5 to 10 Years.	From 10 to 15 Years.	From 15 to 20 Years.	From 20 to 40 Years.	From 40 to 60 Years.	Over 60 Years.
s retained in ty...........	1	1	....	....	....	....	....	....	....	..	2	....	....
s fatal in City	1	....	....	....	....	....	....	....	....	....	1	....	....
s sent to Hos- al..........	8	2	1	1	....	....	1	1	....	....	5	1	....
s fatal in Hos- tal.........	2	....	....	....	....	....	....	....	....	....	1	1	....

TABLE XCIX.—SCARLET FEVER—1883.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1883.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	6	2	9	3	5	1	4	..	10	2	5	2	1	1	1	1	..	..	2	..	3	..	10	1	57	13
Second	2	1	4	..	5	1	6	..	5	..	4	..	3	..	..	..	4	2	1	..	3	2	2	..	39	6
Third	5	2	9	2	18	2	14	1	12	3	15	1	9	..	1	..	3	..	5	..	12	..	6	3	109	14
Fourth	6	1	6	..	9	..	8	..	14	..	6	..	2	1	..	.	..	..	2	..	9	1	11	2	73	5
Fifth	2	1	8	..	8	..	5	2	16	2	6	2	2	1	4	..	1	1	6	..	5	2	1	2	64	13
Sixth	38	6	11	5	29	8	27	7	21	5	10	1	2	2	10	3	11	3	14	4	6	2	5	2	184	48
Seventh	20	4	25	1	12	1	19	1	18	1	12	..	8	1	7	2	16	3	11	..	17	3	12	2	177	19
Eighth	26	6	16	4	14	3	19	7	15	3	11	3	19	1	9	1	8	1	6	1	13	..	9	1	165	31
Ninth	9	1	7	1	11	..	14	5	12	1	12	..	..	.	..	..	5	1	2	..	4	..	12	2	88	11
Tenth	22	5	23	..	19	4	30	4	19	4	21	8	15	1	4	1	8	1	4	..	8	..	17	3	190	31
Eleventh	19	3	9	..	11	6	12	3	16	1	3	..	6	1	2	..	3	..	9	..	8	..	6	1	103	15
Twelfth	28	10	16	5	17	5	11	3	31	7	17	2	19	7	22	1	11	2	8	2	7	..	5	1	192	45
Thirteenth	16	2	24	5	21	3	11	2	24	8	13	1	2	..	3	1	2	1	4	..	2	..	5	2	127	25
Fourteenth	5	4	7	2	5	2	24	1	9	7	7	1	5	1	2	2	1	..	1	..	12	1	10	1	88	22
Fifteenth	15	..	4	2	4	1	8	.	11	1	7	...	1	..	1	1	..	1	16	2	4	..	5	...	76	8
Sixteenth	8	1	14	1	9	2	20	2	19	1	10	1	10	3	2	1	4	2	10	1	7	2	13	4	126	21
Seventeenth	17	1	12	..	14	1	25	4	12	3	18	4	6	..	5	..	4	..	12	1	17	4	17	3	159	21
Eighteenth	7	1	10	3	11	2	14	1	17	5	7	1	8	1	10	2	4	..	5	1	7	2	5	2	105	21
Nineteenth	28	3	29	5	18	..	11	1	14	..	17	2	8	1	2	1	8	1	9	2	17	..	14	1	175	17
Twentieth	24	2	9	1	14	1	19	2	21	1	9	1	..	..	1	..	3	..	5	3	1	1	5	..	111	12
Twenty-first	23	4	20	2	25	3	24	4	10	3	23	3	9	3	7	..	3	..	15	1	11	2	33	1	203	26
Twenty-second	26	9	27	4	16	3	32	7	21	4	18	2	7	..	8	..	9	..	11	..	6	..	8	1	189	30
Twenty-third	15	3	14	3	9	3	15	2	25	5	9	1	2	..	3	..	1	..	2	..	3	..	14	1	112	18
Twenty-fourth	10	2	8	1	21	3	7	2	6	1	4	1	2	..	1	..	..	..	7	..	20	1	7	1	83	12
Twenty-fifth	31	3	26	8	27	5	17	1	17	1	5	..	5	1	3	..	3	2	6	..	12	..	10	..	162	21
Total	408	77	347	58	352	60	396	62	395	69	269	37	150	26	109	17	112	21	173	18	214	23	242	37	3167	505

TABLE C.—SCARLET FEVER—1883.

Cases and Deaths, by Ages and Sexes.

	Males.	Females.	Under 1 year.	Under 2 years.	Under 3 years.	Under 4 years.	Under 5 years.	From 5 to 10 years.	From 10 to 15 years.	From 15 to 20 years.	From 20 to 40 years.	From 40 to 60 years.	Over 60 years.
Cases	1574	1593	81	206	358	405	376	1233	313	76	112	7	....
Deaths	244	261	18	83	91	73	62	148	20	3	7	....	....

TABLE CL.—DIPHTHERIA—1883.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb		Mar.		April.		May		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1883.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	7	2	3	2	7	2	1	1	5	1	..	...	1	...	2	1	...	1	1	2	2	...	5	1	34	13
Second	...	..	2	1	3	1	...	...	3	1	2	...	2	3	1	...	2	...	...	...	...	...	2	1	17	7
Third	2	1	4	1	3	...	...	..	5	...	6	2	3	1	1	1	3	...	3	...	9	2	8	5	47	13
Fourth	3	2	3	1	2	1	2	...	1	...	1	1	...	...	...	...	...	...	2	2	4	3	1	1	19	11
Fifth	1	1	8	...	4	4	1	2	...	...	3	3	...	...	...	...	1	...	...	...	3	2	1	...	17	12
Sixth	15	6	7	1	12	8	4	3	8	1	3	2	2	2	3	...	1	1	8	4	6	4	3	...	72	32
Seventh	6	2	1	1	3	...	1	...	1	...	3	..	2	...	4	1	2	...	3	2	3	4	11	2	40	12
Eighth	24	6	10	4	11	3	16	3	14	4	6	1	4	1	9	2	12	1	5	3	4	...	12	9	127	36
Ninth	4	1	6	2	3	...	...	...	4	1	1	1	...	...	...	...	1	...	1	...	1	...	...	...	21	5
Tenth	13	5	3	1	5	...	9	4	12	6	2	3	3	1	1	...	9	3	3	3	14	5	10	3	84	34
Eleventh	1	...	1	...	2	...	6	2	3	1	...	...	...	..	1	..	1	1	1	...	2	1	1	...	19	5
Twelfth	8	4	1	3	9	3	7	4	2	1	3	2	4	2	2	1	4	...	2	1	2	1	1	...	45	22
Thirteenth	13	3	4	1	5	1	3	2	6	...	3	...	2	1	1	...	4	1	3	2	4	1	1	1	49	13
Fourteenth	6	4	3	...	2	1	5	3	2	...	5	4	1	...	4	1	3	1	2	1	5	2	6	4	44	21
Fifteenth	5	2	...	1	6	1	9	2	5	...	3	2	3	1	2	1	2	2	2	1	2	...	4	1	43	14
Sixteenth	4	4	1	3	5	1	3	2	1	...	4	1	4	...	2	2	8	4	3	4	2	1	3	1	40	23
Seventeenth	10	6	7	3	4	2	6	4	9	1	6	1	2	2	3	...	4	2	2	1	8	3	1	3	69	28
Eighteenth	2	1	5	1	1	...	7	7	3	1	3	...	...	1	3	..	2	1	...	1	3	1	2	1	31	15
Nineteenth	9	2	12	1	1	..	8	4	7	...	10	...	2	1	2	...	3	1	1	.	5	1	6	2	66	12
Twentieth	8	3	7	1	1	2	8	...	1	...	5	2	1	1	...	...	2	...	3	.	1	2	2	1	39	12
Twenty-first	5	1	7	5	7	1	8	2	7	1	6	4	14	...	3	...	4	1	6	1	2	...	3	2	72	18
Twenty-second	9	2	11	1	8	3	7	3	8	2	6	2	2	1	1	..	9	2	...	...	10	4	14	3	85	23
Twenty-third	6	1	3	...	3	...	2	1	2	1	5	...	1	...	6	..	3	2	2	..	1	..	4	2	38	7
Twenty-fourth	5	2	1	...	...	...	3	1	...	...	...	...	...	...	...	...	2	1	...	...	1	2	...	1	12	7
Twenty-fifth	4	1	3	2	7	...	3	...	6	1	1	1	2	3	1	1	2	1	5	1	11	2	10	1	55	14
Total	170	62	108	36	114	33	119	50	115	23	87	32	54	21	52	11	84	26	68	29	105	41	118	45	485	409

TABLE CII.—DIPHTHERIA—1883.

Cases and Deaths, by Ages and Sexes.

	Males.	Females.	Under 1 year.	Under 2 years.	Under 3 years.	Under 4 years.	Under 5 years.	From 5 to 10 years.	From 10 to 15 years.	From 15 to 20 years.	From 20 to 40 years.	From 40 to 60 years	Over 60 years.
Cases	589	596	37	82	114	140	124	397	110	55	109	15	2
Deaths	197	212	27	49	73	63	58	113	18	2	4	2	....

TABLE CIII.—MEASLES—1883.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		March.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1883.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases	Deaths.	Cases.	Deaths.
First	1	...	3	...	1	...	6	...	15	...	15	...	3	...	1	...	1	...	...	...	1	...	3	...	50	...
Second	2	...	2	1	1	...	2	...	1	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	10	1
Third	1	...	2	...	2	...	4	...	14	..	26	..	4	1	1	...	...	...	...	...	1	..	8	...	63	1
Fourth	6	...	8	...	6	...	14	...	3	...	8	...	4	...	1	...	...	...	...	...	2	...	...	...	52	...
Fifth	...	...	...	...	5	1	8	3	3	...	10	2	2	...	1	...	...	...	...	...	1	...	...	...	30	6
Sixth	2	1	3	...	...	...	3	...	12	...	6	..	2	...	...	...	...	...	4	...	13	1	8	1	53	3
Seventh	1	...	4	..	1	...	20	...	39	...	31	1	8	...	2	1	...	...	...	...	...	...	1	1	107	3
Eighth	...	...	...	...	...	...	2	...	2	...	2	...	1	...	...	...	...	...	2	...	12	..	30	2	51	2
Ninth	2	..	...	...	...	...	2	...	6	...	14	1	3	2	...	...	...	...	...	...	1	...	30	1	58	4
Tenth	...	..	...	...	...	...	11	1	14	...	37	...	10	...	2	...	...	...	1	...	6	...	6	...	87	1
Eleventh	3	...	...	...	5	...	14	...	15	...	30	1	...	...	...	...	...	...	...	...	...	...	1	..	68	1
Twelfth	...	...	...	...	...	...	1	...	2	...	1	...	1	...	...	...	...	2	2	...	1	...	10	...	18	2
Thirteenth	...	...	...	...	3	...	6	...	8	..	7	1	3	...	...	...	...	...	...	...	1	...	10	. .	38	1
Fourteenth	1	..	...	...	1	...	...	...	4	...	2	...	1	...	...	...	..	...	3	...	10	...	13	2	35	2
Fifteenth	1	1	2	...	3	1	1	...	...	...	4	...	2	...	2	...	1	...	...	...	...		3	...	19	2
Sixteenth	...	...	2	...	3	...	5	..	15	...	18	...	16	1	11	1	2	...	1	1	1	..	2	...	76	3
Seventeenth	...	...	...	...	3	1	8	...	19	...	13	...	5	1	2	1	...	...	1	...	4	...	...	...	55	3
Eighteenth	2	...	...	...	3	...	...	...	2	..	10	...	6	1	5	3	3	1	3	...	...	...	...	...	34	5
Nineteenth	3	...	5	...	2	...	6	...	45	1	38	3	11	1	1	1	1	...	...	1	...	...	4	1	116	8
Twentieth	4	...	...	...	6	...	36	...	31	2	18	...	...	...	...	...	...	...	...	...	...	...	3	...	98	2
Twenty-first	3	...	3	...	4	...	32	...	66	3	60	4	19	2	9	...	1	...	1	...	4	...	...	...	202	9
Twenty-second	...	...	...	...	1	...	4	...	13	1	9	...	6	1	2	...	...	...	6	...	35	2	125	6	201	10
Twenty-third	...	...	...	...	...	...	4	...	11	...	14	...	4	...	...	...	...	...	...	...	1	...	...	...	34	...
Twenty-fourth	4	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	5	...
Twenty-fifth	4	...	2	...	1	...	6	...	8	...	15	...	5	...	1	...	1	...	...	...	...	...	1	...	44	...
Total	40	2	36	1	51	3	195	4	348	7	391	13	116	10	41	7	10	3	24	2	94	3	258	14	1604	69

TABLE CIV.—MEASLES—1883.

Cases and Deaths, by Ages and Sexes.

	Males.	Females.	Under 1 year.	Under 2 years.	Under 3 years.	Under 4 years.	Under 5 years.	From 5 to 10 years.	From 10 to 15 years.	From 15 to 20 years.	From 20 to 40 years.	From 40 to 60 years.	Over 60 years.
Cases..........	822	782	86	160	152	180	138	731	91	24	41	1	....
Deaths..	38	31	23	18	15	4	2	7	....	....	....	...	....

TABLE CV.—TYPHOID FEVER—1883.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1883.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases	Deaths.	Cases.	Deaths.
First	...	...	1	1	...	...	...	...	...	...	...	...	...	...	2	1	1	1	1	...	2	2	1	...	8	5
Second	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Third	...	...	1	1	1	1	1	1	1	...	1	...	...	...	2	...	3	...	2	...	3	...	...	1	14	4
Fourth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...
Fifth	...	...	...	...	1	1	...	...	1	...	...	...	...	...	...	...	...	...	2	2	...	...	...	...	4	3
Sixth	...	...	...	...	3	2	2	1	...	...	1	1	1	...	2	2	1	...	3	3	2	...	2	1	17	10
Seventh	...	...	1	1	...	...	...	...	...	...	1	1	...	...	...	...	3	...	1	...	1	1	...	...	7	3
Eighth	...	...	1	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	2	...	...	...	1	...	5	1
Ninth	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	2	...
Tenth	...	...	...	...	...	...	1	1	...	...	1	1	...	...	2	1	1	1	2	1	...	...	1	1	8	6
Eleventh	1	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	2	...	1	1	2	1	...	...	7	3
Twelfth	...	...	...	...	...	...	...	...	...	...	...	...	3	2	...	...	...	...	2	...	...	...	...	...	5	2
Thirteenth	...	...	...	...	...	...	...	...	...	...	1	...	1	1	2	2	...	...	2	...	2	1	1	...	9	4
Fourteenth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	1	1	...	1	...	...	...	5	1
Fifteenth	...	...	...	...	1	1	...	...	1	...	1	1	2	1	...	...	2	1	2	1	1	...	...	...	10	5
Sixteenth	1	1	1	1	1	1	3	1	1	1	2	...	...	...	5	2	...	...	3	...	2	2	...	...	19	9
Seventeenth	...	...	...	...	...	...	1	...	...	...	...	...	2	2	3	1	...	...	1	...	...	...	...	...	7	3
Eighteenth	...	...	1	...	2	1	2	2	2	1	2	...	...	...	2	1	5	2	3	3	1	1	...	...	20	11
Nineteenth	...	...	...	...	1	1	...	...	...	...	1	1	1	1	5	3	1	...	1	...	1	...	1	1	12	7
Twentieth	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	1	...	2	1	5	3
Twenty-first	2	2	...	...	...	...	1	...	...	...	1	...	...	...	4	1	4	1	1	1	...	...	...	...	13	5
Twenty-second	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	2	1	3	...	1	...	1	...	8	1
Twenty-third	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	2	1
Twenty-fourth	1	...	2	...	...	...	1	1	...	...	...	...	...	...	1	...	1	1	1	...	2	...	1	1	10	3
Twenty-fifth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	2	1	1	1	4	2
Total	5	4	11	6	11	9	12	7	7	2	13	5	10	7	30	14	30	9	38	13	23	9	12	7	202	92

TABLE CVI.—TYPHOID FEVER—1883.

Cases and Deaths, by Ages and Sexes.

	Males.	Females.	Under 1 year.	Under 2 years.	Under 3 years.	Under 4 years.	Under 5 years.	From 5 to 10 years.	From 10 to 15 years.	From 15 to 20 years.	From 20 to 40 years.	From 40 to 60 years.	Over 60 years.
Cases........	130	72	1	....	3	2	4	16	25	22	95	30	4
Deaths	57	35	...	....	1	1	1	7	6	7	52	14	3

TABLE CVII.—WHOOPING COUGH—1883.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1883.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	...	...	...	...	...	...	...	...	...	...	1	1	...	...	1	1	...	...	1	1	1	1	...	...	4	4
Second	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	1	1
Third	...	...	...	...	1	1	1	1	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	3	3
Fourth	...	...	1	1	1	1	...	...	...	...	...	...	1	1	1	1	...	...	...	...	...	...	...	...	4	4
Fifth	...	...	...	...	...	...	...	...	2	2	1	1	...	...	1	1	1	1	...	...	...	...	...	...	5	5
Sixth	...	...	1	1	2	2	...	...	...	...	...	...	...	...	1	1	...	...	1	1	1	1	...	...	6	6
Seventh	...	...	...	...	1	1	...	...	...	...	...	...	...	...	1	1	...	...	1	1	...	...	...	...	3	3
Eighth	...	...	2	2	...	...	2	2	...	...	...	...	...	...	...	...	5	2	...	...	...	...	...	...	9	6
Ninth	...	...	1	1	2	2	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	4	4
Tenth	2	2	1	1	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	4
Eleventh	...	...	...	...	1	1	1	1	1	1	...	...	...	...	...	...	1	1	1	1	...	...	...	...	5	5
Twelfth	...	...	1	1	1	1	...	...	2	2	...	...	...	...	2	2	...	...	1	1	...	...	2	2	9	9
Thirteenth	...	...	...	...	1	1	...	...	...	...	1	1	1	1	...	...	1	1	1	1	2	2	4	1	11	8
Fourteenth	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	1	1	1	1	...	...	...	...	3	3
Fifteenth	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	2	2
Sixteenth	...	...	2	2	...	...	5	5	2	2	...	...	2	2	2	2	4	2	...	...	1	1	1	1	19	19
Seventeenth	1	1	2	2	1	1	...	...	...	...	...	...	1	1	...	...	...	...	...	...	1	1	...	...	6	6
Eighteenth	...	...	1	1	...	...	1	1	...	...	...	...	1	1	...	...	...	...	...	...	1	1	...	...	4	4
Nineteenth	...	...	2	2	1	1	1	1	...	...	...	...	...	...	...	...	...	...	1	1	1	1	...	...	6	6
Twentieth	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1
Twenty-first	1	1	...	...	1	1	...	...	...	...	...	...	1	1	2	2	2	2	...	...	...	...	5	2	12	9
Twenty-second	...	...	1	1	1	1	...	...	...	...	...	...	...	...	...	...	...	...	2	1	1	1	...	...	5	4
Twenty-third	...	...	...	...	...	...	1	1	...	...	3	3	1	1	2	2	...	...	...	...	...	...	2	2	9	9
Twenty-fourth	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	2	2	...	...	...	...	...	...	3	3
Twenty-fifth	...	...	...	...	1	1	...	...	1	1	...	...	...	...	...	...	...	...	...	...	1	1	1	1	4	4
Total	5	5	16	16	15	15	12	12	11	11	6	6	9	9	14	14	18	15	10	9	11	11	15	9	142	132

TABLE CVIII.—WHOOPING COUGH—1883.

Cases and Deaths, by Ages and Sexes.

	Males.	Females.	Under 1 year.	Under 2 years.	Under 3 years.	Under 4 years	Under 5 years.	From 5 to 10 years.	From 10 to 15 years.	From 15 to 20 years.	From 20 to 40 years	From 40 to 60 years.	Over 60 years.
Cases..........	55	87	57	37	20	12	6	10	...	...	....	....	....
Deaths..........	51	81	57	37	18	10	3	7	....	....	....	....	....

TABLE CIX.—ALL CONTAGIOUS DISEASES—1883.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1883	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases	Deaths.	Cases.	Deaths.
First	14	4	16	6	15	3	6	1	30	3	22	2	5	1	8	4	2	2	5	3	9	3	19	2	151	34
Second	2	1	8	2	9	2	6	2	9	1	8	...	6	4	1	...	6	2	1	...	3	2	4	1	63	17
Third	8	3	16	4	25	4	20	3	32	3	48	3	16	2	6	2	9	...	10	..	24	2	22	9	236	35
Fourth	15	3	18	2	18	2	24	...	18	...	15	1	7	2	2	1	...	...	5	2	15	3	12	3	149	19
Fifth	3	2	11	...	19	7	15	7	22	4	20	8	4	1	6	1	3	2	8	2	9	4	2	2	122	40
Sixth	55	13	22	7	46	20	37	11	41	6	20	4	7	4	16	6	13	4	30	12	28	8	18	4	333	99
Seventh	27	6	31	3	17	2	40	1	58	1	47	2	18	1	14	5	21	3	5	3	21	8	24	5	323	40
Eighth	50	12	29	11	25	5	39	12	31	7	20	4	24	2	18	3	25	4	15	4	29	...	52	12	357	76
Ninth	15	2	15	4	14	...	26	5	22	6	27	2	3	2	...	...	7	2	4	...	10	...	42	3	185	26
Tenth	47	12	28	2	25	4	51	10	46	11	61	12	28	2	9	2	18	5	10	4	28	5	34	7	385	76
Eleventh	24	4	11	...	19	7	33	6	36	3	33	1	5	1	3	...	7	2	12	2	12	2	8	1	203	29
Twelfth	36	14	18	9	27	9	19	7	37	10	21	4	27	11	26	4	25	4	5	4	10	1	18	3	279	80
Thirteenth	29	5	28	6	30	5	20	4	19	7	25	3	9	3	6	3	7	3	10	3	11	4	21	4	215	50
Fourteenth	12	8	11	3	8	3	29	4	16	7	14	5	15	1	10	3	8	3	8	2	28	3	29	7	188	49
Fifteenth	22	4	6	3	14	4	18	2	18	1	15	3	8	2	5	2	5	4	20	4	13	1	12	1	156	31
Sixteenth	13	6	20	7	18	4	36	10	39	4	34	2	32	6	22	8	18	10	17	6	13	6	19	6	281	75
Seventeenth	28	8	21	5	17	6	41	8	41	4	37	5	16	6	13	2	8	2	16	2	17	4	25	6	280	58
Eighteenth	11	2	17	5	17	3	24	11	24	7	22	1	15	4	20	6	14	4	19	5	12	5	7	3	202	56
Nineteenth	40	5	48	8	23	2	26	6	66	1	66	6	22	4	10	5	13	2	12	4	24	2	25	5	375	50
Twentieth	36	5	17	3	21	3	53	2	54	4	32	3	1	1	1	...	5	...	9	4	3	3	12	2	244	30
Twenty-first	25	8	30	7	37	5	65	6	83	7	90	11	43	6	25	3	14	4	23	3	17	2	41	5	493	67
Twenty-second	35	11	40	6	26	7	43	10	42	7	33	4	15	2	11	...	20	3	24	2	53	7	148	10	490	69
Twenty-Third	21	4	17	3	13	4	22	4	38	6	31	4	8	1	11	2	5	2	4	...	5	...	20	5	195	35
Twenty-fourth	20	4	11	1	28	3	11	5	13	2	5	1	2	...	5	...	5	4	8	...	23	3	8	3	139	26
Twenty-fifth	39	4	31	10	36	6	26	1	32	3	20	1	12	4	5	1	6	3	12	1	26	4	23	3	268	41
Total	627	150	520	117	547	120	730	138	867	115	766	92	348	73	253	63	264	74	302	72	443	82	645	112	6312	1208

TABLE CX.—SMALLPOX—1884.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1884.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....
Second	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Third	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....
Fourth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Fifth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Sixth	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	....
Seventh	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....
Eighth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Ninth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Tenth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Eleventh	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....
Twelfth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	....
Thirteenth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Fourteenth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Fifteenth	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....
Sixteenth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Seventeenth	..	..	..	..	..	..	..	..	..	..	2	..	1	..	..	..	..	..	..	..	..	..	..	..	3	....
Eighteenth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Nineteenth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Twentieth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Twenty-first	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Twenty-second	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Twenty-third	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	....
Twenty-fourth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Twenty-fifth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Total	4	..	..	..	1	..	..	..	2	..	4	..	2	..	..	..	1	..	..	..	..	..	..	..	14	....

TABLE CXI.—SMALLPOX IN 1884, BY WARDS.

Cases remaining in City and Cases sent to Hospital, with Deaths in each class of Cases.

WARDS.	IN CITY.		SENT TO HOSPITAL		TOTAL FOR 1884.	
	Cases.	Deaths.	Cases.	Deaths.	Cases	Deaths.
First	1		1		1	
Second						
Third	1		1		1	
Fourth						
Fifth						
Sixth	4		4		4	
Seventh	1		1		1	
Eighth						
Ninth						
Tenth						
Eleventh	1		1	1	1	1
Twelfth	1		1		1	
Thirteenth						
Fourteenth						
Fifteenth	1		1		1	
Sixteenth						
Seventeenth	3		3	1	3	1
Eighteenth						
Nineteenth						
Twentieth						
Twenty-first						
Twenty-second						
Twenty-third	1				1	
Twenty-fourth						
Twenty-fifth						
Total	14		13	2	14	2

TABLE CXII.—SMALLPOX—1884.

Cases and Deaths in City and Hospital, each Month.

MONTHS.	IN CITY.		SENT TO HOSPITAL		TOTAL FOR 1884.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
January	4	...	4	...	4	...
February	...	...	...	...	...	...
March	1	...	1	...	1	...
April	...	...	...	...	...	...
May	2	...	2	...	2	...
June	4	...	4	...	4	...
July	2	...	2	2	2	2
August	...	...	...	...	...	...
September	1	...	...	...	1	...
October	...	...	...	...	...	...
November	...	...	...	...	...	...
December	...	...	...	...	...	...
Total	14	...	13	2	14	2

TABLE CXIII.—SMALLPOX—1884.

Cases and Deaths, by Ages and Sexes.

	Males.	Females.	Under 1 Year.	Under 2 Years.	Under 3 Years.	Under 4 Years.	Under 5 Years.	From 5 to 10 Years.	From 10 to 15 Years.	From 15 to 20 Years	From 20 to 40 Years.	From 40 to 60 Years.	Over 60 Years.
Cases retained in City	...	1	....	....	....	....	....	....	....	....	1	....	....
Cases died in City	....	....	....	....	....	....	....	....	....	....	....	....	....
Cases sent to Hospital	11	2	....	....	....	....	....	....	1	2	3	7	....
Cases died in Hospital	1	1	....	....	....	....	....	....	....	....	....	2	....

TABLE CXIV.—SCARLET FEVER—1884.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		March		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1884.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	4	...	9	...	4	...	6	2	2	...	3	...	6	...	1	...	...	...	2	...	3	...	6	...	46	2
Second	5	2	4	...	2	...	1	...	1	...	6	...	3	1	...	...	1	1	2	1	...	...	1	...	26	5
Third	9	1	3	2	9	...	14	1	7	1	2	1	1	1	2	1	...	...	1	...	4	...	2	...	54	8
Fourth	10	1	6	2	5	...	3	...	6	1	4	...	2	...	...	...	2	...	...	...	1	...	3	...	42	4
Fifth	9	...	11	...	13	1	10	2	7	1	12	1	1	...	1	...	2	1	3	...	3	...	...	...	72	6
Sixth	13	2	3	1	17	2	8	...	12	1	17	...	2	1	2	...	...	...	3	...	5	...	10	2	92	9
Seventh	9	..	8	2	15	1	21	1	19	4	20	3	4	...	3	...	2	...	3	1	4	2	8	...	116	14
Eighth	8	...	12	3	6	2	6	3	3	1	5	1	2	1	1	1	...	...	2	...	7	1	6	1	58	14
Ninth	...	...	2	...	4	1	5	2	5	2	5	1	8	...	3	...	4	...	...	...	6	...	6	...	48	6
Tenth	9	4	17	1	20	3	18	...	20	2	14	2	3	1	3	...	1	..	2	...	3	...	7	...	117	13
Eleventh	6	...	11	4	8	4	7	...	9	1	8	4	3	...	...	1	1	...	...	...	1	...	3	...	57	14
Twelfth	11	4	3	1	10	2	6	1	9	2	...	...	..	...	3	...	...	...	6	1	5	...	2	...	55	11
Thirteenth	4	1	6	1	12	2	10	...	23	5	16	2	3	1	3	...	5	...	12	1	8	...	6	...	108	13
Fourteenth	2	1	4	...	6	2	9	3	2	...	1	...	3	..	...	...	3	...	6	2	1	...	1	...	38	8
Fifteenth	5	1	14	2	12	2	10	2	11	...	6	...	1	1	2	...	1	...	4	...	9	...	3	1	78	9
Sixteenth	13	...	18	1	18	2	20	1	15	5	16	1	7	3	2	1	3	1	5	1	2	...	6	...	125	16
Seventeenth	16	2	12	...	7	...	13	1	8	2	10	3	2	..	3	1	2	...	3	...	6	...	4	1	86	10
Eighteenth	9	2	11	1	10	3	12	3	6	1	6	...	4	2	4	1	2	...	3	...	11	...	12	...	90	13
Nineteenth	18	3	17	...	8	2	20	...	8	...	14	...	6	...	4	1	3	...	12	1	1	...	6	...	117	7
Twentieth	2	...	6	...	11	1	8	...	2	1	5	...	7	...	1	...	...	...	...	...	1	...	12	...	55	2
Twenty-first	23	4	28	1	20	3	24	3	23	4	12	...	3	...	1	...	3	...	20	...	6	1	13	1	176	17
Twenty-second	10	1	15	...	17	..	10	...	15	3	6	1	1	...	2	...	1	...	5	...	1	...	20	...	103	5
Twenty-third	5	1	8	...	17	...	7	...	9	...	2	...	2	...	...	1	2	..	4	1	10	1	12	1	78	5
Twenty-fourth	3	...	3	...	1	1	7	2	1	...	6	...	2	...	3	...	...	...	2	...	4	1	4	1	36	5
Twenty-fifth	10	...	24	1	11	.	9	...	7	...	5	...	4	...	4	...	9	...	11	...	12	1	11	...	117	2
Total	213	30	255	23	263	34	264	27	230	37	201	20	80	12	48	8	47	3	111	9	114	7	164	8	1990	218

TABLE CXV.—SCARLET FEVER—1884.

Cases and Deaths, by Ages and Sexes.

	Males.	Females.	Under 1 year.	Under 2 years.	Under 3 years.	Under 4 years.	Under 5 years.	From 5 to 10 years.	From 10 to 15 years.	From 15 to 20 years.	From 20 to 40 years.	From 40 to 60 years.	Over 60 years.
Cases...........	997	993	37	114	206	252	243	797	220	53	62	4	2
Deaths..........	121	97	16	36	36	42	24	55	5	2	1	1	...

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		Mar.		April		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total, 1884.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	1	...	1	...	...	...	2	1	...	...	...	...	2	...	...	...	...	...	...	1	4	1	1	1	11	4
Second	2	1	...	...	1	1	...	...	2	1	1	1	...	...	...	...	1	1	2	...	1	1	2	2	12	8
Third	1	1	3	2	3	2	3	...	2	1	...	...	3	...	1	1	...	...	5	2	2	...	8	5	31	14
Fourth	2	2	...	...	2	2	6	1	1	...	...	...	...	...	...	1	6	2	1	1	...	...	3	...	21	9
Fifth	...	...	2	1	3	2	2	3	2	3	...	...	1	2	1	...	1	...	3	1	8	4	5	2	28	18
Sixth	8	4	5	2	6	4	6	1	8	1	1	...	5	3	8	7	3	1	3	2	3	...	3	...	59	25
Seventh	1	1	2	1	1	...	3	...	1	...	1	...	1	...	2	2	3	2	3	2	6	2	10	5	34	15
Eighth	10	4	5	...	10	3	5	1	9	2	1	...	8	4	7	1	6	3	18	10	11	6	15	...	105	34
Ninth	1	...	1	...	2	1	1	...	1	...	...	1	2	...	2	1	3	1	1	1	3	2	...	...	17	7
Tenth	11	4	8	2	6	1	5	3	6	4	2	...	2	...	1	...	3	1	1	1	4	2	3	2	52	20
Eleventh	1	1	...	...	3	1	...	...	...	...	1	1	4	1	...	...	...	...	2	1	...	1	2	1	13	7
Twelfth	2	2	2	1	2	1	4	2	...	...	...	...	1	1	1	...	...	...	4	2	2	2	1	1	19	12
Thirteenth	2	...	4	...	4	2	2	...	9	2	4	...	4	...	1	...	5	3	3	2	1	...	2	...	41	9
Fourteenth	2	1	2	1	7	3	4	3	1	...	2	1	1	...	1	1	3	3	2	2	4	4	4	1	33	20
Fifteenth	7	3	8	3	6	2	1	1	3	...	...	...	2	...	1	...	...	...	6	2	4	1	3	3	41	15
Sixteenth	5	3	4	4	3	2	1	1	6	2	4	1	5	1	2	1	2	...	14	8	8	2	3	1	57	26
Seventeenth	4	...	...	...	2	...	1	...	2	...	...	...	3	...	4	3	2	2	3	1	5	4	4	4	30	14
Eighteenth	4	1	4	1	2	2	3	2	1	...	2	1	1	1	...	...	4	2	1	...	5	2	7	4	34	16
Nineteenth	7	1	6	4	2	...	3	1	1	...	7	1	9	2	2	2	4	1	2	1	2	...	10	3	55	16
Twentieth	2	...	2	1	1	1	1	...	3	2	...	...	...	...	...	...	3	2	1	...	4	2	5	1	22	9
Twenty-first	1	...	12	4	5	1	5	1	6	1	3	1	4	3	2	...	8	3	11	3	7	3	19	7	83	27
Twenty-second	5	2	9	4	1	...	4	1	6	3	8	4	4	2	4	...	7	2	5	1	1	...	16	1	70	20
Twenty-third	...	...	1	1	2	...	3	1	3	1	5	1	2	...	...	...	4	1	6	4	2	...	7	4	35	13
Twenty fourth	2	1	...	...	...	...	...	...	...	...	2	2	2	...	...	...	5	3	6	3	4	1	...	...	21	10
Twenty-fifth	6	2	2	...	1	...	4	2	3	...	3	1	1	...	7	1	9	1	7	6	3	2	6	2	52	17
Total	87	34	83	32	75	31	69	25	76	23	47	16	67	20	47	21	82	34	110	57	94	42	139	50	976	385

TABLE CXVII.—DIPHTHERIA—1884.

Cases and Deaths, by Ages and Sexes.

	Males.	Females.	Under 1 year.	Under 2 years.	Under 3 years.	Under 4 years.	Under 5 years.	From 5 to 10 years.	From 10 to 15 years.	From 15 to 20 years.	From 20 to 40 years.	From 40 to 60 years.	Over 60 years.
Cases..........	485	491	25	80	121	99	92	328	97	31	84	14	5
Deaths............	203	182	23	67	67	55	48	99	8	7	7	3	1

TABLE CXVIII.—MEASLES—1884.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1884.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases	Deaths.	Cases.	Deaths.	Cases.	Deaths	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths	Cases.	Deaths	Cases.	Deaths.
First	4	..	1	..	10	..	1	..	2	..	1	1	2	..	..	..	..	..	..	..	1	.	2	..	24	1
Second..........	..		..	..	..	..	1	..	1	..	1	.	6	3	4	1	..	..	..	..	..	..	..	..	13	4
Third	17	..	3	..	3	1	5	..	7	..	..	..	5	..	..	..	..	..	..	..	..	..	2	..	42	1
Fourth	..	..	..	..	..	..	5	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	6	....
Fifth	..	..	..	..	..	..	..	..	2	1	3	..	5	3	1	1	..	1	..	..	..	..	..	..	11	6
Sixth	10	3	5	1	2	..	4	..	..	..	2	.	..	..	..	1	..	..	1	..	..	..	2	..	26	5
Seventh.........	3	..	..	..	2	..	2	..	..	..	..	..	7	..	3	..	..	..	1	..	..	..	2	..	20	....
Eighth..........	5	1	2	..	1		29	1	21	2	3	..	7	1	2	1	3	..	13	..	25	3	8	1	119	10
Ninth............	17	6	1	..	1	..	..	..	..	..	6	1	2	1	2	1	..	..	.	..	..	..	1	..	30	9
Tenth............	11	1	8	..	2	..	3	..	5	..	2	..	2	1	5	1	..	..	..	..	..	..	2	..	40	3
Eleventh.	5	1	2	..	..	..	3	.	..	..	3	..	2	..	2	..	..	..	..	..	..	..	..	..	17	1
Twelfth.	16	2	2	..	14	1	5	1	..	.	4	..	..	1	6	..	..	..	..	..	..	..	1	1	48	6
Thirteenth	15	2	30	1	19	1	34	1	12	2	8	1	1	..	..	..	..	..	..	..	6	..	10	..	135	8
Fourteenth.......	9	1	12	1	13	3	9	4	14	1	5	1	3	..	1	..	..	..	.	..	2	..	1	..	69	11
Fifteenth	21	1	1	1	2	1	..	..	1	..	2	..	..	..	..	..	1	..	12	2	57	2	34	2	131	9
Sixteenth	23	3	5	2	3	1	8	..	1	..	13	3	3	1	1	..	..	..	4	1	10	2	16	2	87	15
Seventeenth	1	..	2	..	5	..	12	..	6	..	27	2	3	..	1	..	1	..	1	..	3	..	3	..	65	2
Eighteenth.......	..	..	2	..	1	..	2	..	1	..	.	..	1	1	2	1	3	1	17	2	19	..	23	2	71	7
Nineteenth.......	11	1	9	..	2	..	7	1	14	..	9	..	8	1	..	..	1	..	1	..	1	..	7	..	70	3
Twentieth.........	4	..	..	..	1	1	..	..	2	..	3	..	2	..	..	..	..	..	..	..	..	..	..	..	12	1
Twenty-first	2	1	3	..	1	..	1	..	..	..	2	..	1	..	9	1	3	1	..	..	11	..	19	2	42	5
Twenty-second ...	28	4	6	1	4	..	8	..	12	..	6	1	2	1	..	..	..	..	.	..	1	..	6	..	73	7
Twenty-third.....	..	..	..	..	..	..	2	..	..	..	3	..	..	..	..	..	..	..	2	..	..	..	8	..	15	....
Twenty fourth....	..	..	..	..	..	..	..	..	1	..	1	.	1	..	..	..	..	..	..	..	..	..	..	..	3	....
Twenty-fifth......	1	..	6	..	..	..	..	..	4	..	13	..	5	..	1	..	1	..	..	..	1	..	14	..	46	....
Total.........	203	27	100	7	86	9	141	8	106	6	117	10	68	14	40	8	13	3	52	5	138	7	161	10	1225	114

TABLE CXIX.—MEASLES—1884.

Cases and Deaths, by Ages and Sexes.

	Males.	Females.	Under 1 year.	Under 2 years.	Under 3 years.	Under 4 years.	Under 5 years.	From 5 to 10 years.	From 10 to 15 years.	From 15 to 20 years.	From 20 to 40 years.	From 40 to 60 years.	Over 60 years.
Cases...........	646	579	70	130	119	132	138	508	70	22	35	1	.. ..
Deaths.........	49	65	23	44	18	7	9	13	....	....	....	....	.. ..

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		March.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1884.	
	Cases.	Deaths.	Cases.	Deaths.	Cases	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	1	1	...	...	1	...	1	...	...	...	1	1	...	...	1	1	2	2	2	...	4	1	...	...	13	6
Second	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	2	....
Third	...	...	1	...	...	...	1	...	...	...	...	...	...	...	3	1	1	...	1	1	...	...	...	...	7	2
Fourth	1	1	...	...	...	...	...	...	...	...	1	1	...	...	...	...	1	...	...	...	2	...	...	...	5	2
Fifth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	2	....
Sixth	1	...	...	...	3	2	2	1	1	2	...	...	1	1	...	...	8	5	2	2	4	1	1	...	23	14
Seventh	...	...	...	...	...	...	...	...	1	1	...	...	...	...	2	1	...	...	3	3	1	...	1	1	8	6
Eighth	...	...	...	...	...	...	...	...	...	...	...	...	1	1	3	2	1	1	4	2	1	1	1	...	11	7
Ninth	...	...	...	...	...	...	...	...	...	...	1	1	...	...	1	1	...	...	1	1	...	...	...	...	3	3
Tenth	1	1	...	...	1	1	...	...	...	...	...	...	1	1	...	...	...	...	3	1	3	2	...	...	9	6
Eleventh	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	1	1	1	...	...	1	1	2	1	6	4
Twelfth	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	2	1	1	...	...	...	4	1
Thirteenth	...	...	...	...	...	...	...	...	1	1	2	1	2	2	1	1	1	1	...	...	...	...	...	...	7	6
Fourteenth	...	...	...	...	1	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1	1	...	...	3	2
Fifteenth	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	2	1	1	...	1	1	6	3
Sixteenth	1	1	2	...	2	2	...	...	1	1	...	...	1	1	...	...	2	2	2	1	...	...	2	1	13	9
Seventeenth	...	...	...	...	...	...	2	1	...	...	1	...	...	...	1	...	1	1	...	...	1	1	...	...	6	3
Eighteenth	...	1	1	1	...	...	1	1	...	...	1	1	...	...	3	3	1	1	4	3	3	2	1	1	15	13
Nineteenth	3	...	...	...	...	...	1	1	2	2	...	...	...	...	...	...	1	...	4	1	...	...	2	2	13	7
Twentieth	...	...	...	...	...	...	1	1	...	...	...	...	...	...	1	...	...	...	1	1	...	...	2	1	5	3
Twenty-first	...	...	1	...	...	...	...	...	...	...	1	...	...	...	2	...	...	...	1	...	1	...	2	...	8	....
Twenty-second	2	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	1	2	...	3	1	...	...	9	2
Twenty-third	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	3	1	...	...	4	1
Twenty-fourth	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	2	2
Twenty-fifth	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	2	2	3	1	2	1	1	1	10	5
Total	12	6	7	1	8	6	9	5	6	7	9	5	7	6	21	11	28	19	38	19	33	13	16	9	194	107

TABLE CXXI.—TYPHOID FEVER—1884.

Cases and Deaths, by Ages and Sexes.

	Males.	Females.	Under 1 year.	Under 2 years.	Under 3 years.	Under 4 years.	Under 5 years.	From 5 to 10 years.	From 10 to 15 years.	From 15 to 20 years	From 20 to 40 years.	From 40 to 60 years.	Over 60 years.
Cases...........	116	78	....	2	....	....	....	15	22	42	82	24	7
Deaths..........	70	37	....	2	....	....	...	3	7	19	53	17	6

TABLE CXXII.—WHOOPING COUGH—1884.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1884.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	1	1
Second	1	1	..	..	1	1	..	..	..	..	..	..	1	1	..	..	1	1	..	..	..	..	..	..	4	4
Third	..	..	..	..	..	..	..	..	3	3	..	..	3	3	1	1	..	..	..	..	..	..	1	1	8	8
Fourth	..	..	..	..	1	1	..	..	..	..	..	..	..	..	1	1	1	1	1	1	..	..	..	..	4	4
Fifth	..	..	..	..	..	..	..	..	1	1	1	1	2	2	5	5	1	1	1	1	..	..	..	..	11	11
Sixth	..	..	..	..	..	..	1	1	..	..	1	1	1	1	1	1	1	1	1	1	1	1	..	..	7	7
Seventh	..	..	2	2	..	..	1	1	..	..	..	..	2	2	1	1	3	3	..	..	1	1	..	..	10	10
Eighth	..	..	..	..	..	..	..	..	2	2	3	3	4	4	4	3	5	4	2	2	1	1	1	1	22	20
Ninth	..	..	..	..	..	..	..	..	..	..	2	2	5	5	3	3	..	..	..	..	..	..	..	..	10	10
Tenth	1	1	..	..	..	..	..	..	..	..	3	3	2	2	4	4	1	1	..	..	1	1	1	1	13	13
Eleventh	..	..	..	..	..	..	..	..	3	3	..	..	..	..	3	3	2	2	1	1	..	..	2	2	11	11
Twelfth	1	1	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	2	2
Thirteenth	1	1	..	..	1	1	..	..	..	..	..	..	1	1	..	..	..	..	4	1	..	..	..	..	7	4
Fourteenth	..	..	1	1	1	1	..	..	..	..	..	..	1	1	2	2	2	2	..	..	..	..	..	..	7	7
Fifteenth	..	..	..	..	..	..	1	1	1	1	..	..	..	..	1	1	1	1	..	..	1	1	..	..	5	5
Sixteenth	..	..	1	1	1	1	2	2	2	2	3	3	5	5	2	2	..	..	2	2	2	2	..	..	20	20
Seventeenth	..	..	..	..	1	1	..	..	..	..	..	..	3	3	3	3	1	1	1	1	..	..	1	1	10	10
Eighteenth	..	..	..	..	..	..	..	..	1	1	..	..	3	3	1	1	2	2	5	5	2	2	3	3	17	17
Nineteenth	1	1	1	1	..	..	..	..	..	..	1	1	1	1	2	2	1	1	1	1	..	..	1	1	9	9
Twentieth	..	..	2	2	..	..	..	..	1	1	1	1	1	1	..	..	..	..	1	1	..	..	..	..	6	6
Twenty-first	1	1	2	2	..	..	1	1	2	1	..	..	3	3	2	2	1	1	..	..	..	..	..	..	12	11
Twenty-second	..	..	1	1	..	..	..	..	1	1	5	2	1	1	1	1	1	1	..	..	..	..	1	1	11	8
Twenty-third	..	..	..	..	..	..	1	1	1	1	..	..	1	1	..	..	3	3	1	1	1	1	..	..	8	8
Twenty-fourth	..	..	1	1	..	..	..	..	..	..	2	2	..	..	..	..	..	..	1	1	..	..	..	..	4	4
Twenty-fifth	..	..	1	1	..	..	..	..	1	1	..	..	2	2	2	2	2	2	3	2	3	1	..	1	14	12
Total	6	6	12	12	6	6	7	7	19	18	22	19	43	43	39	38	30	29	25	21	13	11	11	12	233	222

TABLE CXXIII.—WHOOPING COUGH—1884.

Cases and Deaths, by Ages and Sexes.

	Males.	Females.	Under 1 year.	Under 2 years.	Under 3 years.	Under 4 years.	Under 5 years.	From 5 to 10 years.	From 10 to 15 years.	From 15 to 20 years.	From 20 to 40 years.	From 40 to 60 years.	Over 60 years.
Cases	118	115	109	57	26	16	13	12	....	....	....	....	....
Deaths	112	110	109	55	23	14	11	10	...	...	....	....	....

TABLE CXXIV.—CONTAGIOUS DISEASES, ALL CAUSES—1884.

Cases and Deaths, by Months, in each Ward.

WARDS.	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total for 1884.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First	10	1	11	...	15	...	10	3	5	...	5	2	10	...	2	1	3	3	4	1	12	2	9	1	96	14
Second	8	4	4	...	4	2	2	...	4	1	8	1	10	5	4	1	4	3	4	1	2	1	3	2	57	21
Third	27	2	10	4	15	3	23	1	19	5	3	1	12	4	7	4	2	...	7	3	6	...	13	6	144	33
Fourth	13	4	6	2	8	3	14	1	7	1	5	1	2	...	1	2	10	3	2	2	4	...	6	...	78	19
Fifth	9	...	13	1	16	3	12	5	12	6	16	2	9	7	8	7	5	3	7	2	11	4	5	2	123	41
Sixth	36	9	13	4	28	8	21	3	21	4	21	1	9	6	11	9	12	7	15	5	13	2	16	2	216	60
Seventh	13	1	12	5	18	1	27	2	22	5	21	3	14	2	11	4	8	5	11	6	12	5	21	6	190	45
Eighth	23	5	19	3	17	5	40	5	35	7	12	4	22	11	17	8	15	8	39	14	45	12	31	3	315	85
Ninth	18	6	4	...	7	2	6	2	6	2	14	6	17	6	11	6	7	1	2	2	9	2	7	...	108	35
Tenth	33	11	33	3	29	5	26	3	31	6	21	5	10	5	13	5	5	2	6	2	11	5	13	3	231	55
Eleventh	12	2	13	4	11	5	10	...	12	4	13	5	9	1	7	5	4	3	3	2	2	2	9	4	105	37
Twelfth	30	9	7	2	26	4	15	4	9	2	5	...	2	3	10	...	1	...	12	4	8	2	10	2	135	32
Thirteenth	22	4	40	2	38	6	46	1	45	10	30	4	11	4	5	1	11	4	19	4	15	...	18	...	298	40
Fourteenth	13	3	19	3	28	10	22	11	17	1	8	2	8	1	5	3	8	5	8	4	8	4	10	1	154	48
Fifteenth	34	5	23	6	21	5	12	4	16	1	8	...	3	1	4	1	4	2	24	5	72	4	41	7	262	41
Sixteenth	47	7	30	8	17	8	31	4	25	10	36	8	21	11	7	4	7	3	27	13	22	6	27	4	297	86
Seventeenth	21	2	14	...	15	1	28	2	16	2	40	5	12	3	12	8	7	3	8	2	15	5	12	6	200	39
Eighteenth	13	4	18	3	13	5	18	5	9	2	9	2	9	7	10	6	12	6	35	10	36	6	36	10	218	66
Nineteenth	40	5	33	5	22	2	31	3	25	2	31	2	24	4	8	3	10	7	9	3	4	...	26	6	263	42
Twentieth	8	...	10	3	13	3	10	1	8	4	9	1	10	1	2	...	3	2	3	1	5	3	19	2	100	21
Twenty-first	27	6	46	7	26	4	31	5	31	6	18	1	11	6	16	3	15	3	32	3	25	4	53	10	331	57
Twenty-second	40	7	31	7	22	...	22	1	34	7	25	8	9	4	7	1	10	4	12	3	6	1	43	2	261	45
Twenty-third	5	1	9	1	19	...	13	2	13	2	10	1	6	1	...	1	9	3	14	6	20	3	27	5	145	27
Twenty-fourth	6	2	4	1	1	1	7	2	2	...	11	4	5	...	3	...	6	4	9	4	8	2	4	1	66	21
Twenty-fifth	17	2	35	2	12	...	13	2	15	1	21	1	12	2	14	3	23	5	24	9	21	5	32	4	239	36
Total	525	102	457	76	439	86	490	72	439	91	400	70	267	95	195	86	201	88	336	111	392	80	491	89	4632	1046

VITAL STATISTICS FOR 1884, BROOKLYN.

By R. M. Wyckoff M. D., Secretary and Registrar of Vital Statistics in the Department of Health.

The actual mortality in Brooklyn during the year 1884 amounted to 14,116, an increase of 358 as compared with the preceding year's total; still-births are not included in the above total. In the year 1884 there were reported 1,169 cases of still-births, or 87 more than in the previous year. The number of births recorded was 11,718, or 668 more than in 1883.

The births should, according to a very close estimate made by me, be not less than 38 in every 1,000 of the population, whereas the rate of actually reported births is not much over 18 per 1,000, taking the average of a number of years. The number of marriages recorded in 1884 was 4,510, or 360 more than in 1883. In respect of still-births, births and marriages, it is necessary to state that they are not completely reported; the mortality returns, however, are full and complete.

The estimated population in 1884 was 644,526. On this, as a basis for an average annual death rate, we find the rate to have been 21.90.

This rate is lower than that of 1883, when there died 22.04 in each 1,000, the population at that time being held to be 624,118: the rate of growth is estimated to be .0327 per annum. A comparison of the mortality in Brooklyn for recent years may be made by means of the following statement:

YEAR.	Deaths by all Causes.	Population per Census or Estimate	Death rate per 100.	Death by Consumption.
1884.........	14,116	644,526 E *	21.90	1,913
1883......	13,758	624,118 E	22.04	1,847
1882.........	15,014	604,356 E	24.84	1,806
1881.........	14,533	583,220 E	24.83	1,754
1880.........	13,222	566 689 C	23.33	1,736
1879.........	11,569	548,500 E	21.09	1,665
1878........	11,075	531,100 E	20.85	1,509
1877........	11,362	514,300 E	22.09	1,587
1876........	12,334	498,300 E	25.20	1,539
1875........	12,470	482.493 C	25.84	1,522

* The population of the city is estimated for 1885, at July 1, at 665,602.

In the year 1884 there were no deaths from smallpox; the deaths by this disease among the cases that were removed to the County Hospital at Flatbush were two in number, and are not included in the above total, inasmuch as they occurred beyond the city limits.

Diphtheria caused 385 deaths, a decrease of 24 from the previous year. The deaths by scarlet fever were 218, a decrease of 287; by measles 114, an increase of 45; by whooping cough 222, an increase of 90; by croup 280; cholera infantum caused 856 deaths; all diarrhœal diseases under five years of age 1,576; and at all ages 1,836; cerebro-spinal meningitis 1; typhoid fever 107; malarial fevers, all kinds, 272; intemperance and delirum tremens 81.

A comparison of the mortality by the principal zymotic diseases for the past five years may be made by the following table.

	1884.	1883.	1882.	1881.	1880.
Measles	114	69	168	56	156
Scarlet Fever	48	505	892	651	222
Diphtheria	385	409	631	1,169	1,118
Croup	280	318	334	438	420
Whooping Cough	222	132	249	118	111
Typhoid Fever	107	92	93	99	71
Malarial Fevers	272	258	290	306	256
Diarrhœal, under 5 years	1,576	1.340	1,600	1,493	1,415
Diarrhœal, all ages	1,836	1,597	1 893	1,707	1,610

By certain other more prominent causes the number of deaths were: Rheumatism 87; cancer, all locations, 322; marasmus 415; consumption 1,913, an increase of 66; tubercular meningitis and hydrocephalus 282; meningitis, not certified as tubercular, 460; apoplexy 305; convulsions, chiefly among children less than one year old, 174; sunstroke 41; all diseases of the nervous system 1,398; diseases of the heart 710; bronchitis 622; pneumonia 1,118, a decrease of 127; all diseases of the respiratory system 1,934; Bright's disease 449; puerperal diseases 199; old age 265; infantine asthenia and premature birth 351; suicide 66; homicide 18; in public institutions 1,072; in tenement houses 4,243. The number of inquest cases, exclusive of still-births, was 1,086.

By the five principal classes of causes of death the number of decedents was—1. Zymotic class 3,747. 2. Constitutional class 3,122. 3. Local class 5,548. 4. Developmental class 1,259. 5. By violence 440. By seasons the record was: In the first quarter of the year 3,048; second, 3,087; third, 4,355; fourth, 3,626. By sexes: males 7,262; females 6,854. By nativity: born in the United States 9,767; foreign born 4,349. The native males were 5,037; females 4,730; foreign males 2,225; females 2,124; colored persons 241. By age periods: under one year of age 3,924; under five years of age 6,271; from 5 years to 10, 551; 10 to 20, 561; 20 to 40, 2,380; 40 to 60, 2,186; 60 to 100, 2,160; and above 100, 7. By social condition: married 3,694; single 8,770; widows 1,103; widowers 501; and not known 48. Of the deaths by suicide 63 were males and 13 females; married, 41; single, 17; widows, 1; widowers, 7. The native born were 20 in number; foreigners 46. By Wards the deaths were:

* First Ward	316
Second Ward	233
* Third Ward	362
* Fourth Ward	282
Fifth Ward	507
* Sixth Ward	1,037
* Seventh Ward	617
Eighth Ward	512
* Ninth Ward	326
Tenth Ward	709
* Eleventh Ward	600
Twelfth Ward	561
* Thirteenth Ward	380
Fourteenth Ward	720
Fifteenth Ward	510
* Sixteenth Ward	1,221
Seventeenth Ward	674
* Eighteenth Ward	1,073
* Nineteenth Ward	576
* Twentieth Ward	422
* Twenty-first Ward	826
* Twenty-second Ward	505
* Twenty-third Ward	298
* Twenty-fourth Ward	363
* Twenty-fifth Ward	486

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* Of the above deaths there were 1,072 in public institutions, as follows:

WARDS.	NAME OF INSTITUTION.	No. of Deaths.	Total for the Year, by Wards.
First	Old Men's Home	1	1
Third	Sheltering Arms Nursery	29	
Third	St. Mary's Hospital	22	51
Fourth	Brooklyn Maternity	9	
Fourth	Home for Friendless Women	2	
Fourth	Sanitarian Hospital	1	12
Sixth	St. Peter's Hospital	206	
Sixth	Long Island College Hospital	50	
Sixth	St. Paul's Industrial School	6	262
Seventh	Convent of Mercy	3	3
Ninth	Home for Destitute Children	7	
Ninth	Faith Home	7	14
Eleventh	Brooklyn Hospital	82	
Eleventh	Home for Consumptives	40	
Eleventh	Kings County Jail	1	123
Thirteenth	Eastern District Hospital	4	4
Sixteenth	German R. C. Orphan Asylum	2	2
Eighteenth	St. Catharine's Hospital	225	
Eighteenth	Little Sisters of the Poor	52	
Eighteenth	Evangelical Home	4	381
Nineteenth	U. S. Naval Hospital	3	3
Twentieth	Homœopathic Hospital	47	
Twentieth	Graham Home	4	51
Twenty-first	St. Joseph's Orphan Asylum	13	13
Twenty-second	Little Sisters of the Poor (Branch)	12	
Twenty-second	Seney Hospital	1	13
Twenty-third	Brooklyn Nursery	27	
Twenty-third	Baptist Home	3	
Twenty-third	Brooklyn Orphan Asylum	1	31
Twenty-fourth	St. Mary's Hospital	119	
Twenty-fourth	*St. John's Orphan Asylum	32	
Twenty-fourth	Kings County Penitentiary	28	
Twenty-fourth	Zion's Home (Colored)	2	
Twenty-fourth	House of the Good Shepherd	6	
Twenty-fourth	Keith Home	1	188
Twenty-fifth	St. John's Hospital	15	
Twenty-fifth	Old People's Home (Church Charity Foundation)	2	
Twenty-fifth	Methodist Episcopal Home	2	
Twenty-fifth	Hebrew Orphan Asylum	1	20

* The death of twenty-one children and two adults was caused by the destruction of this Asylum by fire, December 18, 1884.

APPENDIX B.

EXTRACT FROM THE MINUTES OF THE BROOKLYN COMMON COUNCIL, NOVEMBER 24th, 1884.

From the Department of Health:

DEPARTMENT OF HEALTH,
November 24, 1884.

To the Honorable the Common Council:

GENTLEMEN:

The experience of this Department concerning the privy-vaults, as existing in this city, is such that they can only be regarded as a constant danger to the public health, and more especially are they to be feared in times of threatening pestilence.

It appears to the Commissioner that the time has now fully come when vaults of every description should be abolished in localities where the streets are sewered, in order that excremental matter may at once be carried away from human habitations, rather than to longer permit its accumulation and decomposition so near to the dwelling and sleeping rooms of citizens as that the air of these rooms can be rendered impure and a source of danger to health.

With this is forwarded a circular, in which the reasons for this opinion are more fully set forth, and to which is asked your careful attention and consideration.

[CIRCULAR OF INFORMATION.]

DEPARTMENT OF HEALTH OF THE CITY OF BROOKLYN,
Office of the Commissioner,
Municipal Department Building.

In consequence of frequent inquiries made at this Department concerning the best sanitary disposal to be made of night-soil within the city, the following circular of information has been drawn up, giving the experience of this and other Health Offices as to the safest methods of getting rid of human waste. That which follows in quotation marks is essentially a reprint from an article prepared by Dr. J. H. Raymond, Commissioner of Health, for the American Public Health Association, at its meeting held at Detroit, in 1883:

"Privies are of four kinds: First, The simple excavation in the earth, either with or without sides of plank or loose stones, so constructed as to facilitate the soaking away into the surrounding soil of the liquid portion of the filth, and thus avoiding the too frequent demands upon the purse of the owner in its emptying. The earth about such vaults soon becomes saturated with the excrementitious matter deposited in them, and these impurities are by the 'ground water' carried farther and farther into the soil, there to decompose and give off pernicious gases; or to find their way by percolation into the neighboring well, to pollute the water therein contained. It has been frequently observed that when the cobble stone privy-vault is being emptied the excrement which was forced into the interstices between the stones when the vault was full, oozes back again into the vault, thus showing that this ground soakage is not an imaginary evil.

"It is quite a prevalent idea that such vaults are unobjectionable, because it is said that earth is a disinfectant, and that such vaults are practically earth-closets. It is hardly necessary to say that this claim cannot be sustained. The analogy between the yard-vault and the earth-closet would be more exact if in the earth-closet the same earth was used over and over again. This we know cannot be done, as when it is once saturated its deodorizing power is exhausted.

"Another kind of vault is what is commonly denominated the 'water-tight' vault. This is similar to the one just described, save that it is constructed on sides and bottom with brick laid in cement. This method of construction is adopted to prevent the ground soakage referred to. But another evil arises which is equally objectionable .The bricks being porous, absorb the fecal matter, and when these vaults have been in use a few months they become permanently polluted, and no amount of cleaning can deodorize them. If it should chance that infected discharges, as from a typhoid or choleraic patient, formed a part of their contents, what is there to prevent the spongy sides of these vaults becoming infecting centres for the propagation of these diseases?

"A third kind of vault is one which, constructed like that last mentioned, is, in addition, connected with the sewer. This sewer connection is of little use, for in most cities the use of water is restricted, and in Brooklyn none of the waste water from the dwelling is permitted to discharge into the vault for fear that stopcocks will be opened and water allowed to run to waste in attempts to wash out the vault when it becomes offensive. The only water, then, which finds its way into such vaults is the rain water from the roof of the building, which is discharged into them by the leaders. In wet seasons even this is not sufficient to flush them properly, and in the summer months, when for many weeks but little rain falls, the excrement is not carried into the sewers, but accumulates as in the other kind of vaults. Indeed, this rain water is rather a disadvantage than otherwise; not being sufficiently abundant to flush the vault, it yet supplies moisture, one of the conditions necessary to the putrefaction of the organic material contained in the vault.

"A fourth kind of vault is represented by the school-house sink. Being made of metal and furnished with appliances to fill it with water and empty it at pleasure, it would seem to have the necessary requisites for the purposes to which it is applied, without creating a nuisance. As commonly constructed, however, it is certainly objectionable. It is the practice to set the metal tank low in the ground, and then build upon it several rows of brick laid in cement. This is practically a brick vault with metal bottom, and is open to the objections made against the so-called 'water-tight' vault already described.

"If these 'sinks' are to be used, they should be set even with the ground, without masonwork of any kind to act as an absorbing surface. The freezing, to which these vaults are liable, can be provided against by inclosing them in well-built structures, instead of the ordinary privy-house. The seats should be hung on hinges so as to permit of easy access to all the interior. Much will depend upon the care bestowed upon such a vault whether it will or will not become offensive. It needs daily emptying, cleansing, and refilling with clean water, and unless intelligently and faithfully watched, will in the end become a nuisance.

"It will readily be seen from these considerations that the first three kinds of vaults should be unqualifiedly condemned as being unsanitary in every sense, and that the fourth kind should only be used when it is properly constructed, and when there is no doubt of its receiving an intelligent supervision, without which, in fact, all contrivances for the same object will inevitably become sources of offense. In case the yard-vaults are abolished, to be substituted by water-closets, great care should be taken to see that their filthy contents are totally removed before they are filled with earth, as it not unfrequently happens that in the erection of new buildings or of extensions to old ones, the site of the former privy-vault becomes the site of the new structure. It is a mistake to suppose that the earth which is used in filling such a vault will disinfect, deodorize and absorb the excrement.

"In an instance that has come under my personal observation, a vault which had been thus filled eleven years before was again opened, and its contents were found to be preserved so perfectly that no one could have told by either the sense of smell or sight that it had ever been out of use.

"The water-closet is designed to supersede the vault, and there is, in my opinion, no location or condition in which it cannot do so with great advantage to the public health. It receives the excrement at the moment of its discharge from the body and permits its passage at once into the sewer, instead of retaining it close to dwellings for an indefinite period, as does the yard-vault. Aside from the exhalation of offensive odors which is thus prevented, this rapid disposal of the human waste is an important matter in preventing the spread of those diseases, notably typhoid fever, in which the recent discharges are regarded as comparatively non-infecting, but of which the virulence increases as time passes, so that the retention of such waste in the vault greatly increases the chances of propagation. We often hear objections to the abolition of the yard-vault from those who have been accustomed to its use, on the ground that any structure designed for this purpose should be outside the dwelling, and such persons seem to think that nothing will accomplish this but the vault. Experience has shown that water-closets can be placed in yards without difficulty, provided proper precautions are taken to prevent freezing."

It is the unanimous opinion of sanitary authorities that privy-vaults and cesspools in yards, with their putrefying contents, are the principal agents in the development and spread of zymotic diseases.

In order to carry into effect the foregoing proposed action the Commissioner requests your honorable body to unite with him in the repeal of Sanitary Ordinance, Section 177, which reads as follows:

"Section 177. That all cesspools or privy vaults shall be water-tight, and when on lots adjacent to sewers shall be connected with the same, in the manner required by the regulations of the Board of City Works,"

and in the adoption, in its place, of the following new section, namely:

SECTION 177. That no privy vault, cistern, cesspool or other excavation to be used for the reception of liquid waste drainage, excrement or sewage shall be built, erected or constructed in connection with any building, or upon any premises situated upon, or adjoining any sewered street, avenue or place; and no such vault, cistern, cesspool or excavation, heretofore constructed or used upon any premises so situated shall be further used for said purpose without a permit from the Department of Health.

All such premises shall be adequately provided with proper water-closets and connected with the sewer in such manner as to carry immediately away all liquid waste, excrement and drainage therefrom.

And no privy-vault, cistern or cesspool shall be constructed or used upon any unsewered street unless the said vault, cistern or cesspool shall be made and kept water-tight in the manner and form approved by the Department of Health.*

Very respectfully,

R. M. WYCKOFF,

Secretary.

Extracts from "Precaution against Cholera," an address by Edwin Chadwick, C. B., before the Association of Public Sanitary Inspectors, at 1 Adams street, Adelphi, Monday, Aug. 11, 1884:

"The proved secret of cholera prevention is cleansing, keeping clean, pure water, drainage, looking after all epidemic localities, getting the people out of them. We found in old times that not many yards separated deadly spots from safe ones. For treatment, house-to-house visitors to look after premonitory diarrhœa, and one of the most essential provisions is some place for treating cases as close as possible to the attacked house. Removal of a collapsed or recovering case to a distance means death, and the best thing to do, whenever it can be done, is to remove the unattacked out of the house and to keep the patient at home. The house to be thoroughly cleansed before being again occupied. Generally a fortnight's airing and lime-washing is enough.

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* No privy-vault, sink, cistern, or cesspool shall hereafter be made or rebuilt in the city of Brooklyn, within twenty feet of any dwelling or factory, without a special permit in writing from this Board. All vaults, sinks, cisterns and cesspools shall be made and kept water-tight. This must be done in the following manner: The inner four inches of the bottom and sides must be of hard brick soaked in tar, or dipped and laid in hot roofing cement ; if tar-soaked bricks are used, the inner surface of the vault, cesspool, etc., must in all cases be covered over with roofing cement, applied hot.

"But whilst much preventive service may be effective by cleansing of places, very extensive prevention may be effected by active measures for the cleansing of persons. At the last epidemic visitation of cholera, which fell severely upon Limehouse, the children of the pauper half-time school there were distinguished by their entire exemption from any choleraic attack. The distinction was due to the careful head-to-foot washing with tepid water. The like distinction of immunity was presented in other half-time district schools in the metropolis. Indeed, we had experiences of its efficiency in ordinary times, which enables me to present it as a factor of at least one-third in sanitation. Thus, in a children's institution, where the death-rate was twelve in a thousand, it was pervaded by sewer gases. These were cleaned away, when the death-rate was reduced by one-third. Then followed provision for regular daily head-to-foot ablution, when the death-rate was reduced by another third. The experience is similar with the washed populations of prisons. Sewer gas got into the Pentonville prison and the cholera got in with it, but the other well situated and well drained prisons, with their well washed populations, presented examples of entire immunity from the epidemic, as they do now from the ordinary epidemics which ravage the outside populations. Attention to the principle may be commended to you for your personal protection during your service. Nurses trained on Miss Nightingale's principle, who devote themselves to the specialty of nursing in the most infectious cases, those of scarlatina, give themselves head to foot ablutions with tepid water twice a day, and give themselves a daily change of clothes and with attention to ventilation in the patient's bedroom, and to other precepts of Miss Nightingale on nursing, secure complete protection to others as well as to themselves. Health officers who have gone without harm through the most dire plagues declared to the

Academy of Medicine of France that they owed their security to the double head-to-foot washing with warm water. It is satisfactory, amidst the low retrograde sanitary administration, and the great loss of life occasioned by it in France, to adduce a valuable sanitary improvement from thence. The Colonel of an infantry regiment, Colonel Lewis, has introduced a method by which he gives a superior cleansing with tepid water at a tenth of a penny per head, per man. The man undresses, steps into a tray of tepid water, and after being wetted with a spray, soaps himself thoroughly, when, with a two-handed pump, a powerful spray of tepid water washes him from head to foot. Perhaps there is a double soaping. This is really a most valuable sanitary invention. The work is done better with five gallons of water, as against eighty of the bath, and in less than five minutes of time instead of twenty. In Germany they are advancing upon it in rapidity by arrangements of recesses, in rows, in which men enter in squads, and are subjected to simultaneous douches of tepid water. In fact, the cleansing by the jet has been introduced into Australia for bleaching the fleeces of sheep. They tumble the sheep into tanks of warm soapsuds. They are taken out and a powerful jet of warmed water is directed upon them, when the bleaching is effected, which reduces the weight of the fleece by one-third, at an expense of twopence each.

"Apparatus on the principle stated ought to be attached to schools, for relief from the foul atmosphere of filthy-skinned children, which generates the eruptive diseases, and is particularly needed for the poorer classes of the single-chambered families, who have no convenience for the process. It should be stated, as being proved, that a washed pig puts on a fourth more flesh with the same amount of food that is consumed by an unwashed pig. Irish cotters are beginning to find out this economy, and are presenting their pigs as pinks of cleanliness. It is to be hoped that in time they will find out this economy for their children. Apparatus of the sort ought to be provided by manufacturers for the augmentation of the force of their work-people. The foremost direction of sanitary administrative force might well be given to the general application of the principle of washing with tepid water by the jet as a most effective preventive factor, on which a proclamation may be issued and promulgated from the pulpit on the text, 'wash and be clean,' as a defense against the coming pestilence, as well as against those we have with us.

"The extension of large hospital accommodation is being called for as a means of providing for the coming disease. In our Metropolitan Sanitary Commission, we made careful inquiry, as I have stated, as to what did do and what did not do on previous visitations. On our course we found that transmission to the hospitals did not do; that in the advanced stages the mere act of lifting for removal was fatal, and that sending the patients to the hospital was, in a very large proportion of cases, sending them to increased danger and to death, and, with all the defects of the bad homes and their surroundings, it was the safest course, it were a better chance to let them remain there. We therefore rejected positively the preparation of hospitals for them, and relied mainly upon our policy of the preventive treatment of the locality, and house-to-house visitation and treatment of the premonitory symptoms. Our opinion as to the danger of hospital treatment has since been confirmed by Sir James Y. Simpson, who has shown from irrefragable statistics that the larger the hospitals and the higher the curative organization, the more fatal the results, as against the smaller hospitals and as against inferior home treatment. This course of research has been since carried out in Paris, where there is the highest curative organization, perhaps, of any in Europe, where the conclusion of their failure as increased sources of danger is so strong, as to occasion a demand for the suppression of the entire curative service of the large hospitals as an excessively expensive failure. This is set forth in a *memoire* on the causes of pauperism and its remedies, by Monsieur Baron, an *avocat* in the Civil Service, crowned by the largest prize from our Academy of Moral and Political Science of the Institute. In the paper, he cites evidence incontestably proving that of one hundred wounded carried to the hospital, nearly thirty died by the hospital, who, if they had remained at home, would undoubtedly have recovered; that the deaths in the hospital are as ten, whilst under home treatment by the *Societe des Secours Mutuels* they are only as six; that of those who escape, the mean duration of the recoveries in the hospital is thirty-six days, whilst of those treated at home it is only nineteen days. Why, it is asked, such failures? Should such an excessively expensive organization be continued? It is characteristic of the reactionary administration in France, that with such undisputed conclusions, the practice of sending cholera patients to the hospitals at Marseilles and Toulon should be maintained, where it apparently can only have been maintained to kill them. It is to be noted that curative service for our home army had always kept the beds of our army hospitals full, and never emptied them; whilst the preventive or sanitary service, so far as it has been enabled, with an imperfect organization, has largely emptied them, some of them by about one-half. Sanitation has already emptied four thousand beds constructed on curative estimates for the home army."

APPENDIX C.

ADDENDUM.

The ten propositions printed on pages 8 to 10 of this pamphlet were, on motion, referred by the Conference to the proper Committee, and by them carefully considered. This Committee reported them back, with amendments, and the following eleven propositions were unanimously adopted by the conference :

First.—That all surface wells should be closed at the earliest possible moment, and that great care should be taken that the water supply of all cities, towns and villages shall be of undoubted purity.

Second.—That all privy-vaults should be abolished wherever water-closets can be supplied, and that wherever the existence of such vaults is necessary that they should be rendered water-tight in such a manner as to prevent the saturation, not only of the ground surrounding them, but also of the material of which they are built, and that the contents of such vaults should be kept constantly disinfected, and removed to a proper place at frequent intervals.

Third.—That all stagnant ponds, when practicable, should be disinfected, and when possible the water removed by drainage or pumping, and the further accumulation prevented by filling with fresh earth, or other material free from garbage or other filth.

Fourth.—That great care should be exercised to keep at all times clear and free from obstruction all sewers, into which passes the refuse from dwellings, factories and other buildings, and that such examinations should be made as will detect imperfect plumbing in all buildings and the defects immediately corrected. In this connection special attention is directed to the necessity for the thorough ventilation of all soil and waste-pipes, and to the dangers connected with untrapped and unflushed soil-waste and overflow-pipes.

Fifth.—That extraordinary care should be exercised in reference to all tenement houses, lodging houses, and in general, all places where large numbers of human beings congregate, that no accumulation of garbage or other filth be permitted in cellars or yards, and that frequent and thorough cleaning and whitewashing of such structures be required; and that householders should frequently and thoroughly examine their yards, cellars, closets and other out of the way places, to see that no filth of any kind has been deposited there.

Sixth.—That the food supply be vigorously watched to exclude from the market all unwholesome meat; all milk adulterated or from diseased animals; and all unripe fruits and vegetables; and that cow stables be kept, at all times, clean, well whitewashed and free from all excremental accumulations.

Seventh.—That all garbage, kitchen and household refuse should be promptly removed from dwellings, stores and other buildings to a proper place, where it may be destroyed by fire or otherwise disposed of in such manner as to occasion no nuisance.

Eighth.—That such materials should never be used in the filling of lots or disposed of by throwing the same in streets or vacant property where it may decompose and exhale offensive and deleterious gases.

Ninth.—That the attention of the authorities of all institutions, both public and private, and of individuals as well, be drawn to the great importance of maintaining a habit of personal cleanliness in the persons under their charge, as being one of the most efficient means of warding off an attack of cholera, or, if it has once appeared, of greatly reducing its virulence and fatality.

Tenth.—Should the cholera appear in any place in this country, the health authorities of the place should have immediate notice of the first cases in order that prompt action may be taken for complete isolation and disinfection.

Eleventh.—That all authorities of states, cities or villages be urged to adopt measures which will result in the amelioration of all conditions such as have been referred to in the foregoing propositions, with the warning that, in the opinion of this conference such conditions, if permitted to continue, will greatly promote the spread of cholera when it comes, and with the assurance that, if requisite measures are promptly taken to remove them, the disease will be less likely to attack a community so prepared, and if attacked, such a community will be better able to cope with the disease and to reduce its ravages to a minimum.

ANNUAL REPORT

OF THE

Department of Health

OF THE

CITY OF BROOKLYN,

FOR THE YEAR 1885.

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BROOKLYN:
PRINTED FOR THE CORPORATION.
1886.

REPORT

OF THE

DEPARTMENT OF HEALTH.

DEPARTMENT OF HEALTH,
BROOKLYN, December 1, 1885.

HON. SETH LOW, *Mayor.*

SIR :

I have the honor to submit herewith a condensed statement, for the year now closing, in regard to the condition of the city's health, together with an account of the principal sanitary operations of this Department, directed especially against communicable diseases.

THE PUBLIC HEALTH.

The mortality records for the twelve months, ended December 31, 1885, show a fair condition of the general health of the city, differing not very greatly from that of the previous year. The total number of deaths in 1885 was 15,369. The estimated population for 1885 is 664,602; on this basis, with the total above given, we compute the death-rate to be 22.09 in every 1,000 of our population. This estimate of the size of the city is, without doubt, below the figure that should be used, when studying questions of healthfulness; it is very generally claimed, by persons who are competent to judge, that our population is over rather than below 700,000. If we take this estimate as approximately correct, the death-rate will be found to be 21.95 in every 1,000; if we consider the population to have reached as high as 725,000—and this by many is considered the total that most nearly accords with the recent rapid growth of the city—the death-rate will not be higher than 21.2 per 1,000.

The following remarks, taken from an address by the Bishop of Long Island, shows that his researches into the question of the estimated population of this city indicate a total even higher than the highest given above :[*]

In view of the fact that the last census was taken as long ago as 1880, and that during the last two years there has been an unquestioned rapidity of development, especially in the outer wards of the city, we cannot escape the conviction that the mortality should not be rated higher this year than 21.9 per 1,000.

This was also the exact rate for 1884, and hence, we believe that the statement, made above, that the health conditions of the current year and of the previous one do not vary greatly, is numerically sustained. In further confirmation of this belief it may be said that it is the very general impression of medical practitioners that there has been no increase, but rather a decline, in the prevalence and gravity of those diseases that commonly eventuate in death. This opinion has been frequently expressed by physicians who have had occasion to converse with us on these subjects. Pneumonia may be excepted from this statement. This disease was decidedly fatal early in the year, and shows an excess of victims as compared with recent years. This excess amounts to 328 deaths beyond the total in 1884. This exceptional gravity of lung fever goes a long way toward accounting for an apparently higher rate for this year.

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[*] "The present population of Brooklyn, if we accept the actual returns of the Building Department, is certainly not less than 750,000. Forty years ago it was 59,000. If we take the existing ratio of increase, the Brooklyn of 1845 would be built in three years. Since 1855, or in the last thirty years, the city has nearly doubled itself twice. It stands to-day eight on the list of the great cities of Christendom—only five cities of Europe being larger—London, Paris, Berlin, Vienna, and St. Petersburg. Twelve States of the Union have a less population. New Hampshire and Vermont taken together have less. All the Territories combined have less. The city is often called a mere dormitory of New York. Yet what are the facts? Our dock and warehouse system is the largest in the world, representing a capital of $200,000,000. More than $100,000,000 is invested in local business, employing 300,000 of our population. The water front of the city—basins, docks, piers, &c , all in one way or another connected with commerce, is twenty-five miles in extent. In 1880. 9,000 vessels discharged their cargoes at this water front against 7,000 in New York : so that while New York is the chief port of the United States, and one of the greatest in the world, Brooklyn receives most of the shipping—2,000 vessels more than New York. Besides this foreign trade, 18,000 canal and river craft and coasting vessels used our water front in the same year. The aggregate tonnage of these rose to 2.500,000. Further, the manufacturing interests of Brooklyn are only less than her commercial interests The census of 1880 shows that Brooklyn had then. within a fraction of $69,000,000 invested in factories—that nearly $23,000,000 was annually paid out in wages, and that the value of the annual product was $188,573 056. These were the figures five years ago What changes have been made in them are in favor of Brooklyn, so that as well in manufactures as in commerce this city ranks among the chief in the country. Still further, it is instructive to note the facts in regard to building. In 1883, the returns of the Building Department showed that 2,806 new edifices had been completed, or over nine for every working day in the year—68 being large factories, and all but 493, dwellings. This number of newly finished buildings was 183 in excess of the number erected in New York during the same period. The number of building permits issued in 1883 in Brooklyn, was 2,688, and in New York 2.300 : or 388 more in Brooklyn than in New York. From December 1, 1883, to December 1, 1884, there was an increase of 254 new buildings over the like period in the year previous ; representing an increase of $2,000,000 in cost, so that, active as was the building energy in 1883, it was even more so in the year just closed. Nine out of ten of these structures were dwellings, and as a rule they waited but a short time for occupants. A year ago a leading New York paper used the following language : "Land in the present limits of

To enable a comparison of the chief causes of death during the last decade the accompanying table has been prepared :

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the metropolis will undoubtedly continue to appreciate in value, and it is already beyond the reach of persons of small incomes. It is highly improbable that any large number of small houses, such as a comparatively poor man could afford to buy for a home, will ever be erected in the present city limits. The land will be too valuable, and the taxes too high. At present only 61,052 persons own real estate out of a population of 1.500,000 ; or only about one person in twenty-four, and the number is growing less. A solution of the problem may yet be found in the annexation of a part of Long Island, with rapid transit across the East River."

The remedy, it will be seen, is found on Long Island ; but it must be remembered that annexation to New York, with increase of taxation, would, in good part, defeat the end aimed at. The present independent city of Brooklyn, with its future suburbs, is really the solution. But look at other facts. In 1880 the population of New York, 1,206,299, was housed in 73,684 buildings, only 49,000 of which were dwellings, and 35,000 of these tenement houses for from two to eight families or more ; 650,000 of the people were living in 21,000 tenement houses, averaging 31 persons in a tenement. Business and tenement houses are the most paying investments. The old city has been swallowed up by them, and the newer city, even the best resident portions, is being steadily and resistlessly encroached upon. Only 12,000 single families in New York live in first-class houses, which they own ; such is the crowding in tenement houses that in certain districts the population runs all the way from 508 to 1,596 persons to a square acre of 207.5 feet to each side. January 1, 1884, there were 86,936 buildings of all kinds in New York, and 86,225 in Brooklyn, making only 711 more in New York than in Brooklyn, with a much faster rate of building in the latter than in the former. In a year or two, with the present rate, Brooklyn will have the greater number of buildings. But of the buildings in Brooklyn, by the latest returns down to January 1, 1885, 81,804 are dwellings. That is, there are 8.120 more dwellings in Brooklyn than in New York ; and this condition of things is constantly increasing In 1884, 2,323 new dwellings were erected in Brooklyn against 1,800 in New York, making 523 more in Brooklyn than in New York. Of these, 1,800 dwellings erected in New York, 1,013 were tenement houses (not flats.) It is instructive, too, to note the lines of growth in Brooklyn. Thus, of the 2,806 new buildings erected in 1883, all but 271 were built in the fifteen outlying wards. The total cost of new buildings for that year was $13,100,624, of which $10,572,694 was expended in these comparatively new wards, against $2,527,930 in old wards. More than half the population of the city is already located in these new wards, and the growth is chiefly in this direction, though every ward is growing."—Bishop Littlejohn, May 19, 1885.

Comparative Table of Mortality by Prominent Causes of Death in Ten Years.

CAUSES.	1876	1877	1878	1879	1880	1881	1882	1883	1884	1885
Total from all causes	12,334	11,362	11,075	11,569	13,222	14,533	15,013	13,758	14,116	15,369
Zymotic class	4,360	3,962	3,192	3,283	4,310	4,952	4,880	3,664	3,747	4,125
Smallpox	309	5	....	....	2	35	12	1	....	None
Measles	159	10	67	38	156	56	168	69	114	175
Scarlet fever	352	730	363	344	222	651	892	505	218	363
Diphtheria	812	778	544	689	1,118	1,169	632	409	385	519
Croup	412	325	317	250	420	438	334	318	280	313
Whooping cough	190	118	195	204	111	118	248	132	222	157
Typhoid fever	97	85	59	59	71	99	83	92	107	153
Malarial fevers	137	154	184	143	256	306	289	258	272	242
Cholera infantum	1,043	953	666	680	975	1,028	1,007	791	856	993
Diarrhœal, dis., all ages	1 546	1,461	1,165	1,258	1,602	1,707	1,893	1,597	1,836	1,854
Diarrhœal, dis., under 5 years	1,367	1,300	1,011	1.073	1,407	1,493	1,600	1,340	1,576	1,623
Consumption	1,539	1,587	1,509	1,665	1,736	1,754	1,806	1,847	1.913	1,965
Bronchitis	397	314	365	479	495	471	684	573	622	675
Pneumonia	883	724	829	975	972	1,022	1,204	1,245	1,118	1,446
Violence	622	299	294	316	420	402	433	414	440	477
All causes, under 5 years	6.242	5,560	5,294	5,201	6,215	6,865	7,136	5,838	6,271	6,772
All causes, under 1 year	3,179	2,871	2,943	2,881	3,343	3,633	3,816	3,500	3,924	4.201
Death rate per 1,000	24.76	22.10	20.85	21.08	23.33	24.83	24.84	22.04	21 90	23.09

No death by smallpox occurred within the city; one removed case died at the county hospital. There has been a slight increase in the severity of measles, scarlet fever and diphtheria, and a decline in whooping cough, and the zymotic—a preventable class of diseases—shows in 1885 no great increase beyond the total for 1884. This year will not be found to contribute an excessive mortality by affections of the bowels, as compared with former years, although it is to be regretted that the number of victims by cholera infantum and allied affections was large, owing to the climatic causes largely, and shows how serious is the drain upon infant life—no way having yet been discovered to mitigate the fierce inflictions of midsummer heat. Typhoid fever has increased of late, and is now engaging the serious attention of this Department. The run of typhoid fever for nearly 40 years—together with some other instructive data —is set forth in the table given on following page :

Table showing the principal recorded data respecting the Mortality by Diphtheria and Typhoid Fever in Brooklyn.

Year.	Population.	Deaths, all Causes.	Diphtheria.	Typhoid Fever.	
1830	*12,406	....	....	.....	
1832	24,200	....	....	.....	274 deaths by cholera. No other case reported.
1840	*36,233	....	....	.....	
1847	†59,574	1,777	....	.....	Deaths and "interments" are included in the totals of 1847 and 1848. Deaths include still-births until 1866.
1848	82,974	2,095	....	70	
1849	90,774	3,052	....	34	Cholera prevailed; 650 deaths in 1849. Deaths and not "interments" included in total from all causes.
1850	*98,574	3 848	......	20	
1851	119,915	2,858	....	42	
1852	141.256	3,184	....	43	52 deaths by cholera.
1853	162,597	3 504	....	29	
1854	183,938	4,768	......	63	Cholera prevailed; 656 deaths. (Williamsburg was annexed to Brooklyn in 1854.)
1855	*205,280	3,836	....	30	Population of Williamsburg, 55,876.
1856	217,556	3,726	......	40	29 deaths by yellow fever.
1857	229,832	5,561	..... .	46	
1858	242,108	6,399	....	51	Smallpox prevalent; 22 deaths by yellow fever.
1859	254,384	5,908	13	59	First year in which diphtheria was tabulated.
1860	*266,661	6,913	135	85	
1861	272,551	6,985	165	116	
1862	278,441	7,157	219	129	
1863	284,331	7,922	332	131	
1864	290,221	8,250	214	177	
1865	*296,112	8,464	154	250	
1866	313,800	8,683	77	207	Deaths by cholera, 517. Prior to 1866, still-births were recorded as deaths.
1867	330,600	8,389	101	111	5 deaths by cholera.
1868	352,500	8,750	133	103	
1869	373,600	8,759	139	96	
1870	396,099	9,546	110	111	
1871	412,000	10,259	157	92	522 scarlet fever deaths.
1872	428,500	12.684	184	149	737 smallpox deaths.
1873	445,800	10,968	252	103	
1874	468,735	11.011	580	81	
1875	*482,493	12,470	965	102	619 smallpox deaths.
1876	498,300	12,334	812	89	159 measles deaths; 730 scarlet fever deaths.
1877	514,300	11,362	778	82	
1878	531,100	11,075	544	59	No deaths by smallpox in 1878 and 1879.
1879	548 500	11.569	689	59	
1880	*566,689	13,222	1,118	71	
1881	583,220	14.533	1,169	99	
1882	601,356	15,014	631	93	
1883	624,118	13,758	409	92	
1884	644,526	14,116	385	107	
1885	665,602	15,369	519	153	

* Census. † Census of 1845.

No serious epidemic visited us ; cholera has slain its thousands this year in countries separated from us only by the Atlantic, and there was no day during the past summer when it might not have visited these shores. Happily we were spared that peril ; much, however, was attempted meanwhile to put our city in order against its possible extension hither. Of this more will be said in another part of this report. This may here be said, however, that it is believed that at no time in the city's history have we been in a better state of preparation to contend with such a visitation, if it should have befallen us.

Of pneumonia it will be seasonable to say a word. The winter is at hand when its ravages are especially felt ; a cautionary signal may be raised. The avoidance, by the individual, of exposure to extreme fluctuations of temperature ending in a fall in the thermometer, and a watchful protection of the surface of the body when exposure is unavoidable, will in many instances prevent pneumonia and thus save life. In this most variable climate it is wise frequently to consult the thermometer and govern the clothing accordingly, especially in midwinter; and on the occasion of unexpected exposure to low temperature the careful man will see to it that, so soon as possible, the abstraction of the bodily heat shall cease and the loss thereof shall be replaced. It is true that now and then life is lost among the poor of the community by exposure to cold, where the sufferers had no remedy or alternative, but a hundred fold larger number fall by the way among those who are well-to-do, who have simply been thoughtless of their own welfare ; it often happens that in course of a winter a number of valuable, apparently robust lives, are lost by pneumonia, concerning which the presumption is that they might have been spared by the use of reasonable caution as to the clothing and housing of the body.

Compared with most cities of the first magnitude Brooklyn fares well as to its death-rate. Among the seven largest English-speaking centres, in which Brooklyn stands the fourth in size, the rates in 1884 were as follows :

1. London, 20.34 per 1,000 (the lowest ebb ever reached by that city); population 4,020,000.
2. New York, 25.9; population 1,350,000.
3. Philadelphia, 21.6; population 927,000.
4. Brooklyn, 21.9; population 644,500.
5. Liverpool, 25.2; population 573,000.
6. Glasgow, 26.9; population 518,0000.
7. Dublin, 27.5; population 351,000.

The rates among certain other large capitals were as follows:

Paris, 25.6; population 2,240,000.
Berlin, 26 4; population 1,240,000.
St. Petersburg, 31.9; population 930,000.
Vienna, 26.3; population 760,000.
Brussels, 23.8; population 426,000.
Rome, 27.4; population 319,000.

The above data are for the year 1884, that being the latest available at the present time for this comparison. From them it will be seen that only two of the 12 cities named excelled Brooklyn. One of these two was London, which for ten years has been known as the most healthful metropolis of the world, an enviable distinction that has been attained only after long years of sanitary labor, and at a cost of vast sums of money appropriated for elaborate and extensive constructions for drainage, sewerage and other improvements.

In regard to the economical bearings of a provident and thorough sanitary administration, the recent experience of Montreal affords an instructive lesson. We are informed that that city has, within the past few months, been obliged to expend not less than $100,000 in its attempts to cope with epidemic small pox. This sum seems an enormous tax upon a city of the size of Montreal, when we consider that, in much larger cities, this amount is ample to meet the cost of a whole year's health operations for all purposes, and when we further reflect that one-half that amount, spread over a period of five years and used in preventive measures, would without doubt have either stamped out smallpox or, at least, prevented a virulent epidemic outburst of that disease.

CHOLERA.

This disease which has spread to such an alarming extent in some parts of Europe, and which was looked for during the past summer in this country, has not as yet made its appearance. So far as I am informed not a single case has come to our shores. Some faint idea of the ravages caused by this scourge when once it gains a foothold in a country under circumstances calculated to foster it, may be obtained by referring to its statistics in Spain, where, of all the countries of the world, it has been most fatal.

From March 4th to October 21st, 1885, the disease prevailed in 33 provinces. There were reported 273,549 cases, of which 101,346 proved fatal.

PONDS.

The measures which were adopted one year ago in anticipation of an epidemic of cholera in this country, and reported upon by me a year ago, have been rigidly adhered to during the summer just ended. In 1884 a large number of ponds of stagnant, and in many case of offensive water were disinfected, drained and filled. This work was deemed of great importance, second only to the removal of the surface wells, as it is in such water-soaked sections that the cholera poison seems to find the soil most favorable to its development and growth. More work in this same direction was performed during the past summer. The department has been greatly aided in carrying out these improvements by Mr. W. H. Goff, the Superintendent of Sewers, who devoted a great deal of his time, both day and night, to its supervision. The following table gives the locations of these ponds and the cost of draining and filling:

List of Expenditures incurred in the Draining and Filling of Ponds situated at the locations given below, during the year 1884.

East side of Second avenue between Tenth and Eleventh avenues..	$900 00
East side of Second avenue between Seventh and Eighth streets....	250 00
Corner of Second avenue and Ninth street..........................	250 00
Corner of Second avenue and Thirteenth street....................	96 00
Corner of Second avenue and Fortieth street.......................	129 00
Lorraine, Columbia and Delevan streets..............................	8,300 00
Corner of Columbia and Nelson streets..............................	495 00
Corner of Columbia and Bush streets..................................	100 00
Corner of Columbia and Commerce streets...........................	15 00
Corner of Columbia and Ninth streets.................................	45 00
Corner of Lorraine street and Hamilton avenue.....................	25 00
Clinton, between Lorraine street and Hamilton avenue..........	6,750 00
Clinton street, east side, near Hamilton avenue..................	
Hicks street, Henry street, Hamilton avenue and Ninth street....	
Hicks, Henry, Garnett and Ninth streets.............................	
Braxton street between Eighth and Ninth avenues.................	195 00
Braxton street between Seventh and Eighth avenues..............	40 00
Braxton street corner Ninth avenue....................................	110 00
Central avenue near Linden street.....................................	195 00
Jefferson street between Throop and Sumner avenues............	175 00
Jefferson street near Sumner avenue..................................	125 00
1128 and 1130 Lafayette avenue.......................................	27 00
Corner of Fourth avenue and Thirty-sixth streets..................	40 00
Corner of Fourth avenue and Forty-second street..................	150 00
Thirty-ninth street near Eighth avenue...............................	10 00
106 and 108 Forty-second street..	39 50
510 Halsey street...	48 00
381 Halsey street..	100 00
Humboldt near Richardson street.......................................	200 00
Union avenue between North Ninth and North Tenth streets....	900 00
Union avenue between North Ninth and North Tenth and Sixth sts	
Union street between Third and Fourth avenues.....................	50 00
St. Marks avenue between Fourth and Fifth avenues..............	115 00
Fourth avenue between President and Carroll streets............	243 50
316 and 318 Prospect avenue..	25 00
Thirty-seventh street near Eighth avenue............................	54 25
Forty-first street near Eighth avenue..................................	39 00
Third avenue, President and Union streets..........................	293 10
Fourth and Fifth avenues between Fifth and Sixth streets.........	45 00
Fortieth street and Eighth avenue.....................................	150 00
Thirty-fifth and Thirty-sixth streets between Third and Fourth avs.	25 00
Fourth avenue and Thirty-third street.................................	300 00
Thirty-ninth street southwest of Eighth avenue.....................	60 00
Thirty-eighth street between Third and Fourth avenues...........	50 00
Thirty-seventh street about 100 feet east of Third avenue.........	40 00
Rear of 656 Herkimer street..	25 00
Central avenue, Hamburg street, Magnolia street and Ralph avenue	140 00
Jackson street and Union avenue.......................................	200 00
317 and 319 Halsey street...	100 00
Nelson street, north side, between Hicks and Henry streets......	85 00
Bush, Centre, Columbia and Hicks streets............................	550 00
Southeast corner of Nelson and Hicks streets......................	40 00

Huntington, Hicks, Columbia and Centre streets	$650 00
Lorraine, Bush, Dwight and Columbia streets	2,475 00
Warren street between Third and Fourth avenues	29 50
Total—55 ponds	$25,493 85

List of expenditures incurred in draining or filling ponds or lots, situated at the locations given below, during the year 1885.

Pond—Bush, Columbia, and Bush and Hicks streets	$995 00
" First and Third streets, Third and Fourth avenues	3,700 00
" Henry and Columbia, Bush and Lorraine streets	4,900 00
" Opposite No. 12 Newell street	20 00
Total—4 ponds	$9,615 00

BILLS RELATIVE TO THE ABATEMENT OF NUISANCES ON VACANT LOTS, &C.

1884.	
Cartage of pumping engine	$64 00
Disinfection of ponds and lots	474 01
Inspection of filling	679 87
Foot bridges over drain, &c	41 00
1885.	
Dredging Gowanus flats, mouth of Third avenue sewer	1,000 00
Disinfecting pond—Johnson avenue, east of Bushwick avenue	14 28
" " Bush, Lorraine, Henry and Columbia streets	166 02
Inspection at pond on Fourth avenue	16 00
Total	$2,455 18

RECAPITULATION OF WORK IN 1884 AND 1885.

Filling ponds, 1884 (55)	$25,493 85
Filling ponds, 1885 (4)	9,615 00
To abate nuisances on vacant lots, 1884	1,258 88
To abate nuisances on vacant lots, 1885	1,196 30
Grand total	$37,564 03

THE THIRD AVENUE SEWER.

This large main, seven feet in diameter, which for so many years has been depositing the filth from thousands of factories, houses and stables, and tens of thousands of human beings upon the low land at the foot of Twenty-eighth street, has during the past summer been completed to the foot of Forty-ninth street, where its contents are discharged into tide water. To remove so much of this material as could be reached, a dredging machine was put to work at the foot of Twenty-eighth street, and has done valuable service, the city contributing one thousand dollars, a part only of the total cost.

REMOVAL OF FILTH.

One of the difficulties with which we have in past years had to contend was the absence of any means for the prompt removal of filth which was deposited on vacant lots, in the streets and in the cellars and yards of tenement-houses. Deeming the cleanliness of the city one of the important preventive measures to be adopted in times of threatened epidemic invasion, a special service was organized, Mr. W. J. Tate, Superintendent of Streets, giving the matter his personal attention. This service consisted of 18 carts and 32 men whose duty it was to go constantly through the tenement-house sections of the city and remove all filth wherever found. The amount of labor performed has been very great; no less than 4,964 loads of 5⅓ cubic feet each having been collected and removed to sea at an expense of nine thousand five hundred and fifty dollars and eighty nine cents.

DISINFECTION OF VAULTS.

To keep in as inoffensive condition as possible the contents of privy-vaults a man was kept at work during the summer, with horse and watering cart, disinfecting privy vaults and other offensive places. This was of great service and would be a very valuable addition to the permanent force of the department.

Report of work accomplished by the Special Service for the removal of dirt and filth from streets, vacant lots, yards, &c., during the Summer of 1885, from May 15th to October 1st.

Work Performed by 32 Men, with 18 Carts.

Number of loads of dirt and filth removed		4,964
Number of loads removed to sea	3,962	
Number of loads of clean dirt and rubbish	1,002	
		4,964

Pay roll of 32 men, with 18 carts	$7,801 99
Car tickets	70 00
Tools	16 50
Mr. Tate, for extra work in superintending service	250 00
Henry Beran, for removing 3,962 loads to sea, at 25 cents	990 50
One man, with cart, in disinfecting privy vaults—114 days, at $3 per day	342 00
One watering cart	80 00
	$9,550 89

PRIVY VAULTS.

The efforts which have been made in past years to abolish such privy vaults as were not constructed of brick and cement and connected with the sewer, have been continued during the current year. Although I am unable to give the exact number of vaults thus abolished, I am sure it cannot be far from ten thousand. This work has extended through a series of years, dating from 1878. In the meantime the city has been growing at a pace far in excess of the construction of sewers, and many new vaults have therefore been built. Since the plumbing law of 1881 was passed this department has in every way discouraged these yard vaults, not permitting them when the street was sewered, and requiring them to be water tight when no other means of disposing of the filth was possible, due to the absence of sewers. The rule which governs this matter is as follows:

"No privy vault, sink, cistern or cesspool shall hereafter be made or rebuilt in the city of Brooklyn, within twenty feet of any dwelling or factory, without a special permit in writing from this Board. All vaults, sinks, cisterns and cesspools shall be made and kept water tight. This must be done in one of the following ways: By the use of a crock or vessel of glazed earthen-ware, not less than one and a quarter inches in thickness; or by a cast or wrought iron vessel one-half inch in thickness; or by brick mason work, constructed as follows: The inner four inches of the bottom and sides must be of hard brick soaked in tar, or dipped and laid in hot roofing cement; if tar soaked bricks are used the inner surface of the vault, cesspool, &c., must in all cases be covered over with roofing cement applied hot."

The large experience of the officers of this department, extending over many years, has resulted in the conviction that yard vaults, no matter how constructed, are always menaces to the public health. This conviction is expressed in the following communication, which was some time ago forwarded to the Common Council:

"Privies are of four kinds: First, The simple excavation in the earth, either with or without sides of plank or loose stones, so constructed as to facilitate the soaking away into the surrounding soil of the liquid portion of the filth, and thus avoiding the too frequent demands upon the purse of the owner in its emptying. The earth about such vaults soon becomes saturated with the excrementitious matter deposited in them, and these impurities are by the 'ground water' carried farther and farther into the soil, there to decompose and give off pernicious gases; or to find their way by percolation into the neighboring well, to pollute the water therein contained. It has been frequently observed that when the cobble stone privy-vault is being emptied the excrement which was forced into the interstices between the stones when the vault was full, oozes back again into the vault, thus showing that this ground soakage is not an imaginary evil.

"It is quite a prevalent idea that such vaults are unobjectionable, because it is said that earth is a disinfectant, and that such vaults are practically earth-closets. It is hardly necessary to say that this claim cannot be sustained. The analogy between the yard-vault and the earth-closet would be more exact if in the earth-closet the same earth was used over and over again. This we know cannot be done, as when it is once saturated its deodorizing power is exhausted.

"Another kind of vault is what is commonly denominated the 'water-tight' vault. This is similar to the one just described, save that it is constructed on sides and bottom with brick laid in cement. This method of construction is adopted to prevent the ground soakage referred to. But another evil arises which is equally objectionable. The bricks being porous, absorb the fecal matter, and when these vaults have been in use a few months they become permanently polluted, and no amount of cleaning can deodorize them. If it should chance that infected discharges, as from a typhoid or choleraic patient, formed a part of their contents, what is there to prevent the spongy sides of these vaults becoming infecting centres for the propagation of these diseases?

"A third kind of vault is one which, constructed like that last mentioned, is, in addition, connected with the sewer. This sewer connection is of little use, for in most cities the use of water is restricted, and in Brooklyn none of the waste water from the dwelling is permitted to discharge into the vault for fear that stopcocks will be opened and water allowed to run to waste in attempts to wash out the vault when it becomes offensive. The only water, then, which finds its way into such vaults is the rain water from the roof of the building, which is discharged into them by the leaders. In wet seasons even this is not sufficient to flush them properly, and in the summer months, when for many weeks but little rain falls, the excrement is not carried into the sewers, but accumulates as in the other kind of vaults. Indeed, this rain water is rather a disadvantage than otherwise; not being sufficiently abundant to flush the vault, it yet supplies moisture, one of the conditions necessary to the putrefaction of the organic material contained in the vault.

"A fourth kind of vault is represented by the schoolhouse sink. Being made of metal and furnished with appliances to fill it with water and empty it at pleasure, it would seem to have the necessary requisites for the purposes to which it is applied, without creating a nuisance. As commonly constructed, however, it is certainly objectionable. It is the practice to set the metal tank low in the ground, and then build upon it several rows of brick laid in cement. This is practically a brick vault with metal bottom, and is open to the objections made against the so-called 'water-tight' vault already described.

"If these sinks are to be used, they should be set even with the ground, without masonwork of any kind to act as an absorbing surface. The freezing to which these vaults are liable can be provided against by inclosing them in well-built structures, instead of the ordinary privy-house. The seats should be hung on hinges so as to permit of easy access to all the interior. Much will depend upon the care bestowed upon such a vault whether it will or will not become offensive. It needs daily emptying, cleansing and refilling with clean water, and unless intelligently and faithfully watched, it will in the end become a nuisance.

"It will readily be seen from these considerations that the first three kinds of vaults should be unqualifiedly condemned as being unsanitary in every sense, and that the fourth kind should only be used when it is properly constructed, and when there is no doubt of its receiving an intelligent supervision, without which, in fact, all contrivances for the same object will inevitably become sources of offense. In case the yard-vaults are abolished, to be substituted by water-closets, great care should be taken to see that their filthy contents are totally removed before they are filled with earth, as it not unfrequently happens that in the erection of new buildings or of extensions to old ones, the site of the former privy-vault becomes the site of the new structure. It is a mistake to suppose that the earth which is used in filling such a vault will disinfect, deodorize and absorb the excrement.

"In an instance that has come under my personal observation, a vault which had been thus filled eleven years before was again opened, and its contents were found to be preserved so perfectly that no one could have told by either the sense of smell or sight that it had ever been out of use.

"The water-closet is designed to supersede the vault, and there is, in my opinion, no location or condition in which it cannot do so with great advantage to the public health. It receives the excrement at the moment of its discharge from the body and permits its passage at once into the sewer, instead of retaining it close to dwellings for an indefinite period, as does the yard-vault. Aside from the exhalation of offensive odors which is thus prevented, this rapid disposal of the human waste is an important matter in preventing the spread of those diseases, notably typhoid fever, in which the recent discharges are regarded as comparatively non-infecting, but of which the virulence increases as time passes, so that the retention of such waste in the vault greatly increases the chances of propagation. We often hear objections to the abolition of the yard-vault from those who have been accustomed to its use, on the ground that any structure designed for this purpose should be outside the dwelling, and such persons seem to think that nothing will accomplish this but the vault. Experience has shown that water-closets can be placed in yards without difficulty, provided proper precautions are taken to prevent freezing.

"It is the unanimous opinion of sanitary authorities that privy-vaults and cesspools in yards, with their putrefying contents, are the principal agents in the development and spread of zymotic diseases."

The law being deficient in power to cause the abolition of a brick sewered vault when in the judgment of this department such a course of action was advisable, the following ordinance was proposed, and, having received the approval of the Common Council and Mayor, is now in force.

§ 177. That no privy vault, cistern, cesspool or other excavation to be used for the reception of liquid waste, drainage excrement or sewage, shall be built, erected or constructed in connection with any building, or upon any premises situated upon or adjoining any sewered street, avenue or place. No such vault, cistern, cesspool or excavation, which was constructed in accordance with existing ordinances, shall be further used for said purpose after having been condemned by the Department of Health and by the Common Council. All vaults not constructed in accordance with existing ordinances shall be at once emptied of their contents, disinfected, and filled with clean earth or ashes. All premises, the vaults of which have been condemned as hereinbefore provided, or which have not been constructed in accordance with existing ordinances, shall be provided with adequate water closets, and connected with the sewer in such manner as to carry away immediately all liquid waste, excrement and drainage therefrom. Water closets may be placed and maintained outside of premises, except in cases where such location shall be condemned by the Department of Health and by the Common Council. No privy vault, cistern or cesspool shall be constructed or used upon any unsewered street, unless the said vault, cistern or cesspool shall be made and kept water tight in a manner and form approved by the Department of Health.

The complete abolition of these vaults is but a matter of time, and will only be accomplished when the city is completely sewered. The presence of these receptacles with their offensive and putrifying contents is a constant danger to the public health, and their removal would in my judgment contribute much to the general welfare of the city at all times, and especially in times of threatened pestilence. I regard this as the most pressing sanitary necessity of the city, to the accomplishment of which all city officials should strive.

NIGHT SOIL AND ITS REMOVAL.

The question of the collection and ultimate disposition of night-soil is one which has sorely vexed this department in past years, and although it has apparently been settled at different times, still it is constantly coming up for renewed settlement. During the past summer serious difficulties occurred, and in order to overcome them the following communication was forwarded to the Common Council :

DEPARTMENT OF HEALTH, OFFICE OF COMMISSIONER,
Municipal Department Building,
BROOKLYN, August 26, 1885.

To the Honorable the Common Council :

GENTLEMEN :

Prior to 1882 the night soil of the city was removed therefrom by contract ; this material, after it had been taken from the vaults, was carried to the Wallabout, where it was deposited in boats and transported thence to New Jersey, and there sold to farmers who utilized it as a fertilizer.

The nature of the business carried on at the Wallabout dock was such as to make it very objectionable that this work of the city should be performed there, and the use of the dock for the removal of the refuse was stopped. In 1882 there was a demand for this material from the farmers of Newtown and New Utrecht. The collectors were required by this Department to obtain the consent of the farmers upon whose farm the material was to be deposited, and the permission of the Board of Health of the town in which the farm was located ; when this was done permits were granted by this Department to remove the material collected to the approved places. This plan worked satisfactorily until the summer, when the Board of Health of Newtown, in July, revoked all its permits and prohibited the further deposit of night-soil within its town. The collectors were then compelled to remove all the material to the farms of New Utrecht ; this was continued until the early part of August, when it was prohibited by the Board of Health of that town. There being no place to which night soil could be removed, the collectors ceased work, and I was compelled, in the emergency, in order to prevent the overflow of privy-vaults, to make temporary arrangements for its removal to sea.

It is apparent that some permanent arrangement must be made for the future, for, notwithstanding the efforts of this Department to abolish all the vaults which can possibly be abolished, there yet remain many built in connection with houses upon streets in which no sewers exist, and others which are legally constructed. I am satisfied that the bordering towns will not grant permission for this material to be brought there in the future, and some provision must be made, either for its removal to a distance by land where it can be utilized as a fertilizer, or to sea where it can be deposited. The expense of this will be considerable; during the past year there were 326,810 cubic feet of night soil taken from the vaults of the city, and 209,837 feet during the first six months of the present year. The expense of this removal must be borne either by the city or by the owners of the vaults. In my judgment it should not be a charge upon the city. Thousands of property owners have gone to the expense of putting sewers in the streets and connecting their houses therewith in such manner as to carry off all filth and have abolished the privy vaults; it is not just that these persons should be taxed to remove a nuisance created by others. It will, I think, be conceded that the burden of the removal of this material from the city should fall upon the owners of the vaults.

In order that this may be done it will be necessary to modify Section 102 of the Sanitary Code, which fixes the maximum price which the collectors can charge at 12 cents a cubic foot. The section is as follows:

"Section 102. That all putrid and offensive matter and all night soil, and the contents of sinks, privies, vaults and cesspools, and all noxious substances, in the built-up portion of the city, shall, before their removal or exposure, be disinfected and rendered inoffensive by the owner, lessee or occupant of the premises where the same may be, or (in default of the same being so done) by the person or contractor who removes or is about to remove the same; and for all such matter so disinfected and rendered inoffensive, the person (not being such tenant, owner or occupant) who shall so disinfect and remove the same, shall be entitled to demand and receive a compensation to be fixed by the Board of Health, not to exceed twelve cents per cubic foot for making such disinfection and removal, to be paid by such tenant, owner or occupant."

The collectors have themselves petitioned for a modification of this ordinance and claim that the price allowed is not sufficient to reimburse them for the work of disinfection and removal from the vault, and also the extra expense of paying for its removal from the city by land or sea. The cost of the mere removal from the vault varies in each case; sometimes the pump can be used and the work be quickly done; at other times the pick and shovel are necessary, and hours may be required to complete the task.

In addition to this the material must in some cases be transported several miles to the dumping place, while in others the distance is but slight. I think the clause limiting the charge to a fixed sum can safely be omitted from the ordinance, and the matter left to be arranged by the owner and the collector whom he employs. There would be little danger of extortion, as there are eight different licensed firms in the business, and if disputes arose they could be settled as all other commercial transactions are when buyer and seller cannot come to satisfactory terms. I would therefore recommend the repeal of the latter part of the ordinance commencing with the words, "and for all such matter so disinfected and rendered inoffensive," &c., and also the words, "in the built-up portions," as night soil and the other refuse materials mentioned should be disinfected before agitated or removed, no matter in what portions of the city they may be; so that the ordinance will in future read:

"§ 102. That all putrid and offensive matter and all night soil and the contents of sinks, privies, vaults and cesspools and all noxious substances in said city shall, before their removal or exposure, be disinfected and rendered inoffensive by the owner, lessee or occupant of the premises where the same may be, or (in default of the same being so done) by the person or contractor who removes or is about to remove the same."

Permit me to call attention to the importance of this subject and to the necessity for its settlement at the earliest possible moment, as the work is of such a nature that it cannot stop, and the longer it continues under the present plan the greater will be the expense to the city.

Respectfully,
J. H. RAYMOND,
Commissioner.

On the 12th of October the Common Council approved the amended ordinance and having received the signature of his Honor the Mayor, is now in force. This material is now being removed without expense to the city to a boat in Newtown Creek and thence is taken to sea.

It is sincerely to be hoped that this arrangement will prove satisfactory; but until our streets are thoroughly sewered and all privy-vaults and cesspools abolished, it will be necessary to make some provision for the final disposition of this material.

In a community like ours the people look to the city officials to use due diligence, especially through the instrumentality of Boards of Health, to look ahead in times of danger by the correction of those fostering conditions. And in this connection let me mention the earnest work given by Dr. Sternberg's Committee on Disinfection and to the one hundred dollars given by the Common Council, perhaps the first instance of the kind when laboratory work has been subsidized by our city government. I believe it will prove a most useful expenditure and a precedent for similar Aldermanic action.

TENEMENT HOUSES.

As a large proportion of the deaths of the city occur in tenement-houses, and as the occupants of these buildings look to the civil authorities for protection in all matters affecting their health, it was deemed necessary that improvements which are at the present time considered essential by all sanitary authorities should be introduced into this city. The following communication to the Common Council will explain itself:

Department of Health,
Office of the Commissioner of Health,
Municipal Department Building,
Brooklyn, March 9, 1885.

To the Honorable the Common Council:

Gentlemen:

Since the present Sanitary Code was adopted, in 1875, very important amendments have been made by the Legislature to the Tenement House Law; amendments which have greatly improved the sanitary condition of the houses of the poor.

In these Brooklyn has not been included, and our city is therefore suffering for the want of power to compel the changes and improvements which are so essential to the welfare of nearly one-fourth of its inhabitants. In order to incorporate into our code such of these amendments as are applicable and desirable, I would respectfully request authority to spend an amount not to exceed $100, in making the necessary searches and putting the matter in such shape as that it can be presented to your honorable body for approval.

Respectfully,

J. H. RAYMOND, M.D.,
Commissioner of Health.

In connection therewith Ald. Quintard offered the following:

(Res. No. 13a.)

Resolved, That the Commissioner of Health be and he is hereby authorized to codify and arrange and amend for submission to this Common Council the laws and ordinances governing the management of tenement houses in this city, at an expense not to exceed one hundred dollars, to be taken from the general fund of the Department of Health.

Unanimous consent was granted.

In accordance with this resolution the ordinances of the Sanitary Code referring to tenement houses were amended, and on the 18th of May forwarded to the Common Council for their approval. These ordinances and the communication which accompanied them are herewith given. Action on them has not yet been taken.

DEPARTMENT OF HEALTH, OFFICE OF THE COMMISSIONER,
Municipal Department Building,
BROOKLYN, May 18, 1885.

To the Hanorable the Common Council:

GENTLEMEN:

I forward herewith for your approval the amended tenement house ordinances, in conformity with a resolution of your honorable body, of March 9, 1885. The portions underlined, which will be printed in italics, are the amendments recommended. These ordinances have been submitted to the following gentlemen for suggestions and have been endorsed by them. I send herewith the letters which I have received from them.

Respecfully,

J. H. RAYMOND, M. D.,

Commissioner.

PROPOSED ORDINANCES REGULATING TENEMENT HOUSES.

SECTION 158. No house, building or portion thereof, in the city of Brooklyn, shall be used, occupied, leased or rented for a tenement or lodging house, unless the same conforms in its construction and appurtenances to the requirements of this code of ordinances; *and if occupied by more than one family on a floor, and if the halls do not open at one end directly to the external air with suitable windows, without a room or other obstruction at that end, it shall not be used, occupied, leased or rented unless it is made to conform to the requirements of said Department of Health for light, ventilation, plumbing and drainage, or subject to the conditions of a permit in writing from said Department of Health.*

SEC. 159. Every house, building or portion thereof, in the city of Brooklyn, designed to be used, occupied, leased or rented, or which is used, occupied, leased or rented for a tenement or lodging house, shall have in every room which is occupied as a sleeping room, and which does not communicate with the external air, a ventilating or transom window, having an opening or area of not less than three square feet over the door leading into and connecting with a room which does communicate directly with the external air, or in the partition between said rooms; or in case there is no adjacent room communicating directly with the external air, there shall be a ventilating or transom window, having the same opening or area, communicating with the entry or hall, *and when practicable, both such ventilating or transom windows shall be provided. In case the room cannot be provided with windows as herein required, such room shall not be further used as a sleeping room.* Every such house or building shall have in the roof, at the top of the hall a ventilator *with a clear opening or area to the external air of not less than one square foot, and more if required by the Department of Health.*

SEC. 160. The roof of every such house shall be kept in good repair and so as not to leak, and all rain water shall be *conducted into the street sewer if a sewer exists in the street; if there is no sewer in the street,* it shall be so drained or conveyed therefrom as not to cause dampness in the walls, yard or area, *in such manner as shall be approved by the Department of Health.*

SEC. 161. Every such building shall be provided with good and sufficient water-closets or privies, of a construction and ventilation approved by the Department of Health, and shall have proper doors, traps and other suitable works and arrangements, so far as may be necessary to insure the efficient operation thereof. Water closets or privy *compartments* shall not be less in number than one to every ten occupants of said house; water closets or privies may be used in common by the occupants of any two or more houses, provided the access is convenient and direct, and provided the number of occupants in the houses for which they are provided shall not exceed the proportion above required for every water closet or privy *compartment.* Every such house, situated upon a lot or street in which there is a sewer, shall have water closets furnished with a proper connection with the sewer, which connection shall be in all parts adequate for the purpose, so as to permit entirely and freely to pass whatever enters the same. Such connection with the sewer shall be of a form approved by the Department of Health. All such water closets shall be provided with sufficient water and other proper means for flushing the same; and every owner, lessee and occupant shall take adequate measures to prevent improper substances from entering privies or water closets, *or any pipes connecting with sewers or cesspools,* and to secure the prompt removal of any improper substances that may enter them, so that no accumulation shall take place, and so as to prevent any exhalation therefrom, offensive, dangerous or prejudicial to health, and so as to prevent the same from being or becoming obstructed. No cesspool shall be allowed in or under any such house; *nor shall any such house be connected with a cesspool where a sewer exists in the street.* In case no sewer exists in the street, a cesspool must be provided, constructed in such situation and in such manner as the Department of Health may direct. It shall in all cases be water-tight, and arched or securely covered over, and no offensive smell or gases shall be allowed to escape therefrom. *Whenever a sewer is built in such street, such house shall be at once connected therewith and disconnected from the cesspool, and the cesspool shall thereupon be emptied of its contents, disinfected and filled with fresh earth.* In all cases where a sewer exists in the street upon which the house or building stands, *adequate leaders and gutters shall be provided, so constructed as to convey all roof water into the sewer: the yard and area shall also be connected with the sewer so that all surface water shall pass freely therein.* Where no sewer exists in the street, *the roof water and all surface water shall be conducted* into the street gutter by a passage beneath the sidewalk, which shall be covered by a permanent cover, but so arranged as to permit access to remove obstructions or impurities.

SEC. 162. It shall not be lawful, without a permit from the Department of Health, to let or to continue to be let, or to occupy or suffer to be occupied as a *living or sleeping room,* any vault, cellar, or underground room whatsoever, unless the same be in every part thereof at least seven feet in height, measured from the floor to the ceiling thereof, nor unless the same be for at least *one half* of its height above the surface of the street or ground adjoining or nearest to the same, nor unless there be outside of and adjoining the said vault, cellar or room and extending along the entire frontage thereof, and upward from six inches below the level of the floor thereof up to the surface of the said street or ground, an open space of at least two feet and six inches wide in every part, nor unless the same be well and effectually drained, nor unless there is a clear space of not less than one foot below the level of the floor, except where the same is so cemented *as to insure dryness,* nor unless the same have an external window opening of at least nine superficial feet clear of the sash frame, in which window opening there shall be fitted a frame filled with glazed sashes, at least four and a half superficial feet of which shall be made so as to open for the purpose of ventilation. Provided, always, that in any area adjoining a vault, cellar or underground room there may be steps necessary for access to such vault, cellar or room, if the same be so placed as not to be over, across or opposite to the said external window, and so as to allow between every part of such steps and the external wall of such vault, cellar or room, a clear space of six inches at least, and if the rise of said steps is open; and provided further, that over or across any such area there may be steps necessary for access to any building above the vault, cellar or room to which such area adjoins, if the same be so placed as not to be over, across or opposite to any such external window.

SEC. 163. No vault, cellar or underground room shall be occupied as a place of lodging or sleeping, except the same shall be approved, in writing, and a permit given therefor by the Department of Health.

SEC. 164. Every tenement or lodging house shall have the proper and suitable conveniences or receptacles for receiving garbage and other refuse matter. No tenement or lodging house, nor any portion thereof, shall be used as a place of storage for any combustible article, or any article dangerous or detrimental to health; nor shall any horse, cow, calf, swine, pig, sheep, goat *or fowl* be kept in said house, *or in the yard of the same, or anywhere on the premises.*

SEC. 165. Every tenement or lodging house, and every part thereof, shall be kept clean and free from any accumulation of dirt, filth, garbage, or other matter in or on the same or in the yard, court, passage, area or alley connected with or belonging to the same. The owner or keeper of any lodging house, and the owner or lessee of any tenement house or part thereof, shall thoroughly cleanse all the rooms, passages, stairs, floors, windows, doors, walls, ceilings, water-closets, privies, cesspools and drains thereof, the house or part of the house of which he is the owner or lessee, to the satisfaction of the Department of Health, so often as shall be required by or in accordance with any regulation or ordinance of said Department, and shall well and sufficiently, to the satisfaction of the said Department, whitewash the walls and ceilings thereof twice at least in every year, and in the months of April and October, unless the said Department shall otherwise direct.

Every owner of a tenement or lodging house, and every person having control of a tenement or lodging house shall, on or before July 1, 1885, *file in the office of the Department of Health his name and address, and also a description of the property, by street number or otherwise, as the case may be, in such manner as will enable the Department of Health easily to find the same, and also the number of apartments in each house, the number of rooms in each apartment, the number of persons occupying each apartment, and the trades or occupations carried on therein.*

All notices and orders of the Department of Health in relation to *a tenement or lodging house, shall be served such length of time* be-*fore the time for doing the thing required, as the Department of*

Health may direct, upon the person who has filed with the Department of Health his name and address, as provided for in this section, and the mailing of such notice shall be sufficient service upon the owner of the property affected.

SEC. 166. *It shall be the duty of the Department of Health to cause a careful inspection to be made of every tenement and lodging house at least twice in each year, and whenever the Department of Health has made any order concerning a tenement or lodging house, it shall cause a re-inspection of the same after the order has been made.*

The keeper of any lodging house, and the owner, agent of the owner, lessee and occupant of any tenement house, and every other person having the care or management thereof, shall, at all times, when required by an officer of the Department of Health, or by any officer upon whom any duty or authority is conferred by these ordinances, give him free access to such house and to every part thereof. The owner or keeper of any lodging house, and the owner, agent of the owner, and the lessee of any tenement house or part thereof, shall, whenever any person in such house is sick of fever, or of any infectious, pestilential or contagious disease, and such sickness is known to such owner, keeper, agent or lessee, give immediate notice thereof to the Department of Health, or to some officer of the same, and thereupon said Department shall cause the same to be inspected, and may, if found necessary, cause the same to be immediately cleaned or disinfected, at the expense of the owner, in such manner as they may deem necessary and effectual. And all rooms or apartments occupied by any person sick of any contagious disease, shall, immediately upon the death or recovery of such person, be, by the person having charge or custody of such rooms or apartments, thoroughly fumigated by the burning of sulphur or otherwise, in such manner as may be required by the Department of Health; and all clothing, beds, bedding or infected articles, used by or in caring for such sick person, shall be likewise fumigated or disinfected, or in extreme cases, destroyed, as the Department of Health may direct.

SEC. 167. Whenever it shall be decided by the Department of Health that any building or part thereof is unfit for human habitation, by reason of its being in such condition as is likely to cause sickness among the occupants, and notice of such decision shall have been affixed conspicuously on the building or part thereof so decided to be unfit for human habitation, and personally served upon the *person whose name and address have been filed as provided in Sec.* 165, if the same can be found in the *City, or by mail, if without the City,* requiring all persons therein to vacate such building or part thereof, for the reasons to be stated therein as aforesaid, such building or part thereof shall within ten days thereafter be vacated, or within such shorter time, not less than twenty-four hours, *as in said notice may be specified; but such Department, if it shall become satisfied that the danger from said house or part thereof has ceased to exist, may revoke said order, and it shall thenceforth become inoperative.*

SEC. 168. No house hereafter erected shall be used as a tenement house or lodging house, and no house heretofore erected and not now used for such purpose shall be converted into, used or leased for a tenement or lodging house, unless, in addition to the requirements hereinbefore contained, it conforms to requirements contained in the following sections.

SEC. 169. It shall not be lawful hereafter to erect for or convert to the purpose of a tenement or lodging house a building on any lot where there is another building on the same lot, *or to build or to erect any building on any lot whereon there is already a tenement or lodging house,* unless there is a clear open space, exclusively belonging thereto and extending upwards from the ground of at least ten feet between said buildings, if they are one story high above the level of the ground; if they are two stories high, the distance between them shall not be less than fifteen feet; if they are three stories high, the distance between them shall not be less than twenty feet, and if they are more than three stories high, the distance between them shall not be less than twenty-five feet.

At the rear of every building hereafter erected for, or converted to the purpose of a tenement or lodging house, on any lot, there shall be a clear open space of ten feet between it *and the rear line of the lot.* But when thorough ventilation of such open spaces can be otherwise secured, said distances may be lessened or modified in special cases by a permit from the Department of Health.

No one continuous building shall be built for, or converted to the purposes of a tenement or lodging house in the city of Brooklyn upon an ordinary city lot, and no existing tenement or lodging house shall be enlarged or altered or its lot be diminished so that it shall occupy more than sixty-five per centum of the said lot, and in the same proportion if the lot be greater or less in size than twenty-five feet by one hundred feet, except in the case of corner lots, where ninety per centum may be occupied by the building.

It shall not be lawful hereafter to erect for or convert to the purposes of a tenement or lodging house a building of a height which exceeds by ten feet the width of the street at the point where the said building is located; nor shall it be lawful hereafter to erect for or convert to the purposes of a tenement or lodging house a building on the rear of any lot on which there is another building, of a height which exceeds the distance between said buildings.

SEC. 170. In every such house hereafter erected or converted, every habitable room, except rooms in the attic, shall be in every part not less than eight feet in height from the floor to the ceiling, and every habitable room in the attic of any such building shall be at least eight feet in height from the floor to the ceiling, throughout not less than one half the area of such room. Every *living or sleeping room* shall have at least one window *communicating* with the external air. The total area of window or windows in every *living or sleeping room* shall be at least one-tenth of the superficial area of every such room, and the top of one at least of such windows shall not be less than seven feet and six inches above the floor, and the upper half at least shall be made so as to open the full width. Every *living or sleeping room* of a less area than one hundred superficial feet, if it does not communicate directly with the external air, shall be provided with means of ventilation by an air shaft extending to the roof *and open at the top* or otherwise, as the Department of Health may prescribe.

SEC. 171. Every such house hereafter erected or converted shall have adequate chimneys running through every floor, with an open fire place or grate, or place for a stove, properly connected with one of said chimneys, for every family and set of apartments. It shall have proper conveniences and receptacles for ashes *and garbage. All receptacles in which garbage is placed shall be provided with tightly fitting covers and shall be water-tight, and constructed of such material as will not absorb the liquid parts and become offensive.* It shall have Ridgewood water, furnished in sufficient quantities at one or more places *on each floor occupied or intended to be occupied by one or more families, so that the same may be adequately and reasonably convenient for the use of the occupant thereof; and all existing tenement houses shall be provided with a like supply of water by the owners thereof whenever they shall be directed so to do by the Department of Health.*

Every tenement house shall have the floor of the cellar properly cemented, so as to be water-tight; *and when the house is located over filled-in ground or clay soil or ground on which water lies, the cellar floor shall be covered with concrete, laid over not less than three inches thick of small broken stone, so as to effectually prevent dampness. It shall be the duty of the Department of Health to see that the cellars of all tenement houses are so made or altered as to comply with this section before January* 1, 1887.

Every such house hereafter erected or converted shall have the halls on each floor at one end open directly to the external air, with suitable windows, and shall have no room or other obstruction at that end, unless sufficient light or ventilation is otherwise provided for in said halls in a manner approved by the Department of Health.

Whenever it shall be certified to the Department of Health by any inspector or officer thereof that any tenement house or room therein *is so overcrowded that there shall be afforded less than six hundred cubit feet of air to each occupant of such building or room, the said Department shall issue an order requiring the number of occupants of such building or room to be reduced, so that the inmates thereof shall not exceed one person to each six hundred cubic feet of air space in each building or room. Whenever there shall be more than eight families living in any tenement house in which the owner thereof does not reside, there shall be a janitor, housekeeper or some other responsible person who shall reside in the said house and have charge of the same, if the Department of Health shall so require.*

A tenement house, within the meaning of these ordinances, shall be taken to mean and include every house, building or portion thereof which is rented, leased, let or hired out to be occupied or is occupied as the home or residence of *three families or more,* living independently of one another and doing their own cooking upon the premises, or by more than two families upon a floor, so living and cooking, but having a common right in the halls, stairways, yards, water closets or privies, or some of them. A lodging house shall be taken to mean and include any house or building or portion thereof in which persons are harbored or received or lodged for hire for a single night or for less than a week at one time, or any part of which is let for any person to sleep in for any term less than a week. A cellar shall be taken to mean and include every basement or lower story of any building or house of which one-half or more of the height from the floor to the ceiling is below the level of the street adjoining.

SEC. 172. *Every owner or other person violating any provisions of these ordinances shall be punishable by a fine of not less than ten dollars nor more than one hundred dollars, or by imprisonment for not more than ten days, for each and every day that such violation shall continue, or by both such fine and imprisonment, in the discretion of the Court or magistrate. Any Justice of the Peace or Police Justice in the city of Brooklyn shall have jurisdiction to hear, try and determine any violation of a provision of these ordinances, and to inflict the penalty herein prescribed.*

In every proceeding for a violation of these ordinances and in every such action for penalty, it shall be the duty of the owner of the house to prove the date of its erection or conversion to its existing use, if that fact shall become material, and the owner shall be prima facia the person liable to pay such penalty, and after him the person who is the lessee of the whole house, in preference to the tenant or lessee of a part thereof. In any such action the owner, lessee and occupant, or any two of them, may be made defendant, and judgment may be given against the one or more shown to be liable, as if he or they were sole defendant or defendants.

Referred to the Committee on Law.

CONTAGIOUS DISEASE HOSPITAL.

The need for a hospital within the city limits to which cases of contagious disease can be sent for treatment becomes more and more imperative. These cases, occurring as they do frequently, in crowded boarding houses, cannot in the present condition of things be taken care of at any of the hospitals of the city, and must either be left where they constantly endanger the lives of their fellow boarders, or be removed to the common wards of the County Hospital at Flatbush. The lack of power to establish such a hospital has been a great embarrassment to this Department in past years, and will be much greater in case of an epidemic. The municipal authorities are agreed upon the advantage to accrue to the city from such a hospital, and with their sanction a bill was introduced into the Legislature of this year, which passed the Senate, but did not pass the House, owing to lack of time, but was on the order of third reading when the Legislature adjourned. (See Appendix C.) It should be again presented during the coming session and its passage urged. It leaves the question of cost entirely to the Board of Estimate.

Had this bill become a law, and the necessary funds been provided, it was not the intention to purchase property nor to erect permanent buildings, but to rent sufficient land in the outskirts of the city at an isolated place and construct temporary pavilions which could be at any time removed to another site, whenever the growth of the city should make such action advisable. During the present month my attention has been drawn to an invention by a citizen of Brooklyn, Mr. William M. Ducker, which would answer admirably for the purpose. It is constructed of waterproof canvas, with wooden floors and contains twelve (12) beds, and is so arranged that it can be readily taken apart and transported in a one horse wagon. It is inexpensive, and at the same time provided with all necessary accessories for heating and ventilating. I am satisfied that such pavilions as these will answer every purpose and be far better than any permanent structure could possibly be. Should it become necessary, on account of prolonged use and consequent saturation of the walls or floors with the germs of disease, these pavilions could be destroyed and new ones substituted at trifling expense. This is a great advantage which such structures possess over those of brick or stone.

PUBLIC PUMPS.

In the beginning of the year 1882 there were 316 public pumps in the city of Brooklyn. A thorough examination of the water furnished by them showed it to be, in the majority of the cases, entirely unfit for human consumption, due to impurities which had found an entrance either from the street or the surrounding soil, more or less permeated with filth from leaking cesspools or privy vaults. At the beginning of 1884 this number had been very much reduced by the action of the Common Council in ordering these wells to be closed on the recommendation of this Department. During the current year all the wells, with one exception, have been closed. The remaining one is situated at the corner of Fulton and Carlton avenues and, as shown by repeated analyses of the water, supplies water against which no complaint can be made. As it may at any time become a source of danger it is kept under close observation. It would be removing a menace to the public health to close it, but there are not sufficient grounds for this Department to condemn it.

The work which has been done in this city in closing the surface wells has been largely quoted throughout the country at large, and has been of substantial aid to the sanitary authorities of other cities, notably Baltimore and St. Louis, in their efforts to abolish the wells which exist in those cities, in which the water has become impure and deleterious. I feel confident that no single measure which has ever been carried out in this city will contribute more to the maintenance of the public health, entirely irrespective of the advent of cholera, and as sanitary authorities are unanimous in regarding the surface wells of cities the most dangerous factor in the spread of cholera, we are to congratulate ourselves that this city will not have to contend with that danger, should we be so unfortunate as to be visited.

RAGS.

During the Spring there was considerable difficulty in preventing the storage in the built-up portions of the city of filthy rags and bones which were collected from the streets, ash barrels and garbage-vessels, and were sorted and picked over in cellars of tenement houses and other unsuitable places. In order to keep this matter more perfectly under control the following ordinance was prepared and, having received the approval of the Common Council, became a law April 28th.

"SEC. 188. No person engaged in buying, selling or storing skins, hides, rags, bones, or similar articles, or who has become possessed by purchase or otherwise of skins, hides, rags, bones or similar articles, for the purpose of selling the same, shall store or keep any of said above mentioned articles within the limits of the city of Brooklyn without first obtaining a written permit so to do from the Commissioner of Health of said city—the terms and conditions of which permit shall be strictly complied with by the person obtaining the same."

A census was then had of places where these businesses were conducted, and the number was found to be 279. Of this number 111 were permitted to continue the storing of clean house rags, and applications for permits for the others were refused. The following table shows the location of these places as they existed before the adoption of the ordinance. In two cases only where, permits were granted, have the condiions been violated, and in both instances the permits have been revoked.

List of Places where Rags were Stored, arranged by precincts.

First Precinct			4
Second Precinct			39
Third Precinct			11
Third Sub-Precinct			10
Fourth Precinct			29
Fifth Precinct			20
Fifth Sub-Precinct			1
Sixth Precinct			24
Seventh Precinct			10
Eighth Precinct			18
Eighth Sub-Precinct			2
Ninth Precinct			....
Ninth Sub-Precinct			...
Tenth Precinct			15
Eleventh Precinct			40
Twelfth Precinct			8
Thirteenth Precinct			48
Total			279
Number of applications for permits		269	
Permits granted	113		
Permits granted and revoked	2		
Permits not granted	154		
		269	
Number of those who have not applied		10	
Total			279

SLAUGHTER HOUSES.

I have again to call the attention of your Honor to the nuisances created and maintained by the continued existence, in the built-up portions of the city, of the slaughter houses, to which are daily driven large numbers of animals, defiling the streets of the city and endangering the lives of adults and children on the route. It is a matter which demands serious consideration, and yet I cannot but believe that the interests of the city would be greatly enhanced were proper abattoirs constructed on the water front, and the present slaughter houses abandoned. It is the opinion of many that legislative action will be necessary to accomplish this end.

The advantages which would be derived from the establishment of an abattoir upon the water front are many, and have been in previous reports referred to. Inasmuch, however, as the subject is one of great importance, I venture to repeat what I have already said. The slaughter houses, of which there are 16 in the city, are so scattered about as to make it impossible to keep them all under proper supervision, and to make sure that no diseased meat finds its way into the market. This difficulty will the more readily be appreciated when it is remembered that the number of animals slaughtered in Brooklyn annually is two hundred and twenty-five thousand (225,000.) No inspection of the carcases after death will ensure the safety of the public; several diseases from which animals suffer, and which render the food unfit for human consumption, cannot be detected unless the internal organs are examined. It is therefore absolutely essential for perfect protection that each animal slaughtered should be inspected at the time of slaughter by a competent inspector. This fact is thoroughly appreciated in Europe, notably in Berlin, where there exists "Municipal Slaughter and Investigation Houses," established in 1883. In these houses have been discovered and rejected the following: 64 cattle and 2,932 organs, 2 calves, 297 hogs and 3,410 organs, all affected with tuberculosis, or consumption, which is now believed to be transmissible to man through meat infected with the disease. Erysipelas was found in 247 hogs; 39 animals were rejected suffering from jaundice; 30 affected with dropsy, and 60 by reason of the meat being in an unhealthy condition, the nature of the disease not stated. In 1,407 cases the microscope detected the presence of tapeworm; 9,000 unborn calves were seized, which would doubtless have found their way into the market as veal had the animals been slaughtered without the careful supervision which was afforded by the centralization of the slaughtering business. And finally no less than 199 animals were found suffering with trichinæ, and the meat condemned and destroyed.

Such supervision as this can never be maintained in a city where the slaughter-houses are not within one enclosure, without the employment of a force which is practically impossible to obtain, unless the appropriations for that purpose are greatly increased. There is but one remedy and that is the establishment of an abattoir upon the water-front to which animals can be brought by boat, thus avoiding the nuisances and danger connected with the present method of driving them through the public streets. The discharge of blood and filth into the sewers with which dwelling houses are connected should also be done away with, as the drainage would be directly into the waters of the bay. Many cities have already adopted the course here recommended for Brooklyn and have derived substantial benefits therefrom, while others in the same condition as ourselves are making every exertion to abolish the slaughter-houses from the built-up portions of the cities and urging the construction of abattoirs upon the water front.

VOLUNTARY SUMMER CORPS.

The great mortality among the children during the intense heat of the past summer induced some of the vaccinators of the Department to offer their services free of expense to the city in visiting the poor and treating the cases of disease which might come under their observation. Although there was no power within this Department to establish such a service, yet the object was so desirable that it was fostered in every possible way. Dr. R. Berendsohn, the prime mover in the matter, was requested to take charge of the service. A number of physicians volunteered their services and several of the druggists of the city agreed to furnish medicines at cost or reduced rates. The thanks of the city are due to all these gentlemen for their contributions toward the alleviation of human suffering. The report of Dr. Berendsohn, which is here given, will be found full of interest and pathos, and it is hoped that arrangements can be made for a similar service during the coming and succeeding summers.

BROOKLYN, October 3, 1885.

DR. J. H. RAYMOND, *Commissioner of Health :*

DEAR SIR :

This being the fifth and final report for the season of 1885 of the work performed by the "Summer Corps" of visiting physicians, it seems opportune to recapitulate what has been done during the five weeks of the existence of the service.

A few suggestions concerning the future establishment of a "Summer Corps" in connection with the Department of Health will not be amiss.

The record shows that 390 children have been treated during a service of five weeks, and that ten deaths occurred among their number. Also that 2,225 houses were visited, with 5,978 families. Considering that the maximum temperature of the summer was reached at the time the physicians began their tour, it will be conceded that they have performed their self-imposed duties very creditably, in tracing as many cases as have been reported. Some of the gentlemen who served never performed like duties before.

The necessity for a future organization of a Summer service seems obvious in view of the figures here represented. Not only have diarrhœal diseases come under the observation of the corps, but sixteen cases of contagious disease were discovered, including scarlet fever and diphtheria. These cases likely would not have come to the notice of the Department, as the parties were unable to employ a physician. The system of immediately visiting the tenement houses where deaths from infantile disease occurred, for the purpose of a possible prevention of further disease taking place in a house or its direct surroundings, cannot be too highly commended. In some instances the sanitary condition of dwellings inspected was such, that a complaint had to be made to improve the same. Parents were instructed as to the most rational way of feeding and clothing their children and what to do when they first became sick.

A corps of twelve physicians, if employed next Summer, could well divide the city up into as many districts and visit the tenement houses located therein. The poor in these districts should also be allowed to call at the offices of the practitioners connected with the Summer service, and their several names and residences should be published for a month at least, daily.

A weekly report should be made to the chief of the "Summer Corps," whose duty it should be, besides visiting the dwellings where recent deaths from infantile disease had taken place, to give a summary exhibit to the Health Commissioner at the end of the week. The compensation should be the same as at present paid the vaccinators attached to the Department, and the commencement of the service June 15th of each year, its termination, September 15th.

The manuscript for "Directions to Parents in the Management of Infants during the Hot Summer Months" is in your hands for approval, the proposition is to print a sufficient quantity for distribution in both the English and German languages.

If the service would be supported by private charities again, such as the Diet Dispensary, the Sea Side Home at Coney Island, and a floating hospital be established for the summer, a diminution in the mortality among infants may be safely prophesied for the season of 1886. It would be discourteous in closing this report not to thank the gentlemen of the drug trade for their willingness and promptness in stepping forward and furnishing medicines gratis, or at cost, to the poor. The kind aid given the service by the Press has been fully recognized and is gratefully remembered.

Your attention is respectfully called to the comparative table specifying the work performed by the "Voluntary Summer Corps" of 1885.

Very truly,

R. BERENDSOHN, M.D.

Comparative table of work performed by the Voluntary Summer Corps of 1885.

	Week Ending					
	Aug. 15	Aug. 22.	Aug. 29.	Sep. 5.	Sep. 21.	Total.
Number of houses visited.	260	512	618	322	513	2.225
" families "	876	1,276	1.526	833	1,287	5,798
" cases treated..........	49	105	103	76	57	390
Of What Nature.						
Diarrhœal.......	30	64	67	32	25	218
Respiratory.......	3	17	18	19	15	72
Contagious	..	.	5	8	3	16
Miscellaneous	16	24	13	17	14	84
Number of prescriptions written.....	49	119	99	71	58	396
" deaths.............	1	7	1	1	..	10
" patients refusing treatment	1	63	31	5	2	102

DIRECTIONS FOR THE MANAGEMENT OF INFANTS DURING THE HOT SUMMER MONTHS.

On this sheet a few simple directions will be given with regard to the care and food of children and infants in health, and what to do when they are sick. Undoubted benefit will be derived by mothers and nurses following these suggestions, thereby preserving the health and lives of a family of small children.

1. An infant from the hour of its birth should be accustome to regularity as to the time of nursing, hours of sleep a bathing, thus :

A new born infant up to its second month of life, should put to the breast regularly every 2 or 3 hours, not ofte overfeeding does harm.

Older infants, say from six months to one year old, should be nursed only five or six times in 24 hours, the child, having finished nursing, should be returned to its cradle, and not be kept in its mother's arms, particularly at night.

Never deny an infant a drink of cold water, if thirsty, but let it take all it wants, well or sick. Ice water should not be given. The water may be first boiled, cooled and bottled, before allowing the baby to drink it.

Healthy infants will sleep the greater portion of the day during the first few months, and sleep should therefore be encouraged.

Do not rock an infant after it has finished nursing.

Bathe the infant once every morning and night, and keep a broad flannel bandage over its stomach, otherwise put light clothing- on it. If you take an infant out after nightfall, always provide yourself with a shawl, which may be wrapped around its body, as sudden changes of the weather are of frequent occurrence. Children should always wear long stockings, not socks, leaving their legs bare.

Strict attention should be paid to the food which children receive when they attend an excursion or picnic with their parents; nothing should be given to them but what would have been put before them at home.

2. Pure cow's milk, when obtainable, is the best substitute for mother's milk. Taste the milk before giving it to the infant, so as to be sure that it has not turned sour.

Infants from one to two months old should be given equal parts of milk and water.

If the infant does not thrive on cow's milk, condensed milk may be tried; but do not change the milk unless you have a good cause for it. Start with a teaspoonful of condensed milk the teacupful of warm water, and increase the quantity of ndensed milk to two teaspoonfuls, as the infant grows older. The cow's milk may be mixed with gelatine-water instead of ain boiled water, and in the event of the baby being constited, oatmeal water may be used. Boil a tablespoonful of ound oatmeal for 15 minutes in a cupful of water and strain fore you fill the nursing bottle.

Corn-starch, farina, rice-flour, &c., &c., should be avoided.

Be careful always to prepare for one meal only.

Nursing-bottles and rubber-nipples should be carefully cleaned ; use soap and water, brush thoroughly and rinse well. Always have two bottles and two rubber-nipples, and use them alternately, one bottle and nipple remaining in the water, to which a little soda is added. Renew the nipples often and buy the old-fashioned *black-rubber* nipple.

Use no glass and rubber tubes for the nursing bottle, although they may appear to you to be more convenient.

Give no candies, fruit, sweetmeats or soothing-syrup to your children.

Infants 12 months old may have a piece of soda-cracker, and may suck the juice from a piece of beef.

Do not give them potatoes or bread.

3. Diarrhœa, Summer Complaint, Dysentry.—Fresh air, light and cleanliness will often prevent disease. Keep your rooms aired, by open doors and windows, both day and night. Bathe the children twice a day and let the water reach the chin of the child, so that nothing but the head is out of the water. If a child is hot and feverish, bathe it more frequently. Do not lose valuable time, when your baby is first taken sick, by the use of home-remedies, but send for a doctor at once or go to the police station house—if you are too poor to pay a fee, the police will send you to a physician.

There should not be any foul smell from the privy-vaults, sinks, gutters, &c. ; if you are so troubled, notify the Health Commissioner. Give your children all the fresh air possible. A car ride at night or a ride on the ferryboats will often quiet children and improve their condition when sick.

TYPHOID FEVER.

The first intimation that the Department received that there was any increase in typhoid fever was by an inquiry of a physician if such was the case. He was informed that the records of the office showed no increase over other years. Several physicians were named as said to have had in their practice a considerable number of typhoid cases. I at once communicated with them. One informed me that he had several cases under his care which were purely malarial, that he always had several cases in the Fall of the year, and that there was no excess this year over preceding years, that he had heard rumors as to the unusual prevalence of fever in the section referred to—South Brooklyn—but so far as he could judge there was no foundation for the report. Another physician also having large practice in that section informed me that he had seen but one case in consultation, and had none in his own practice.

In the meanwhile the matter was noticed in the newspapers, and the inquiries made by citizens at the Health Office were frequent. In order to ascertain the truth, so far as it could be ascertained, the following communication was sent to every physician in the city:

DEPARTMENT OF HEALTH,
BROOKLYN, October 19, 1885.

DEAR SIR :

The alleged presence in the city of typhoid fever to an unusual extent—not corroborated by official reports to this Department—leads me to address the physicians of Brooklyn for the purpose of requesting that all cases of typhoid fever that may occur in the future shall be reported, and that any cases that have occurred in your practice during the past three months, that have not already been reported, shall without delay be reported. Please state upon the report whether, in your opinion, the disease was contracted within or without the city.

Respectfully yours,
J. H. RAYMOND, M.D.,
Commissioner of Health.

In addition to these letters, reports of cases were received. Inasmuch as physicians in the past have never reported their cases of typhoid to the Department to any considerable extent, unless fatal, no comparison of cases could be made to develop the truth or groundlessness of the alleged increased prevalence of the disease this year over other years, and we were compelled to resort to the record of deaths as the only means of comparison, knowing that in typhoid fever the mortality does not vary to any great extent at different times, and that in the absence of complete reports of cases the number of deaths is the best indication of the prevalence of the disease. The examination revealed the following:

	Sixth Ward	Tenth Ward.	Twelfth Ward.	Sixteenth Ward.	Nineteenth Ward.	Twenty-first Ward.	Twenty-third Ward.	Twenty-fifth Ward.
1884—Deaths for 48 weeks, to Nov. 30th.	14	6	0	10	6	0	1	5
1885—Deaths for 48 weeks, to Nov. 30th	20	6	1	10	6	9	9	10

Total deaths in the entire city for 48 weeks ending Nov. 30, 1884 99
" " " Nov. 30, 1885........... 126

To ascertain the exact cause of an increase in the prevalence of a disease which has from the time of the earliest records always existed in a city, is very difficult, if not impossible. While it is comparatively easy to trace to its source an epidemic which prevails for the first time in a small town, and where the location of the first case is known, it is far different when we have to deal with a disease which has always been present, and which has in some years caused five times the mortality of the present year, in a city of seven hundred thousand inhabitants, and where there are no first cases which can be located.

Even as to the cause of epidemics, which have occurred under favorable circumstances for study, considerable difference of opinion as to their origin exists.

However, this did not prevent an attempt, and the department has from the receipt of the first reported cases up to the present time, been at work to remedy defects and to ascertain and remove the cause, if possible. It will be seen by the results the disease is probably not traceable to any one cause, but depends upon a number acting at the same time. From the very moment that the reports of the cases were received the inspectors were set to work to consult with the attending physicians and otherwise to investigate the cases as to their origin.

The first three cases reported from South Brooklyn gave such a history as to make it very probable that they had contracted the disease out of town in Central New York, where they had been during the summer, and such a report was made by the Inspector and so stands upon our records to-day. Three other cases in the same section, three blocks distant, gave a clear history of having contracted the disease at Niagara Falls, and was so stated by the attending physician in his official report. Other cases were reported in which it was possible that the disease was contracted out of town, but nothing definite could be deduced from the evidence, while in other cases this explanation could not account for the disease, as the patient had not been out of town during the summer, but this latter class was not large. It has been characteristic of the disease in South Brooklyn that the poor, those living in tenement houses and in low-lying sections, where the land is made land, who have been in the city continuously during the summer, have almost entirely escaped, while those who have been attacked are among those who have been able to be absent from the city during a considerable part of the summer, and who live in houses built upon original land. In the spring, when the advent of cholera was expected, a sanitary survey was made of the whole region on Long Island from which Brooklyn derives its water supply. This survey was made jointly by the Departments of City Works and Health. The streams were followed up in every case to their source, and everything which could possibly affect the water deleteriously was ordered removed, and a subsequent inspection showed that these directions had been carried out. The Commissioner of City Works has continuously kept an Inspector on this duty. The Department of Health makes weekly analyses of the water supply of Brooklyn, and the chief chemist, Dr. Bartley, reports that these analyses show that the water is up to its standard of purity and that there is absolutely no indication of any impurity.

All the surface wells of Brooklyn, save one at the corner of Fulton and Carlton avenue, the water of which has not been found unfit for human consumption, have been closed months ago, and those that existed in South Brooklyn have been out of existence more than a year, the only water consumed by the residents of this section being the Ridgewood, the common supply of the whole city.

The milk supply also received attention, as typhoid fever had in other countries been traced to this source. Inquiry was made at each house where the disease occurred, with the result that in some cases the family had milk from their own cows ; that supplied to others came from Long Island, others used condensed milk exclusively, while still others were supplied with milk from New Jersey, Connecticut or New York. The condition of the plumbing in the different houses was examined into and that examination is being continued. In some defects were found, in others, the plumbing, so far as could be ascertained, was free from defects. One physician attributed the attack of three persons in a family under his care to the reoccupancy of the house after the summer vacation without the proper attention to thorough ventilation and the filling of the traps with water. In addition to this the water had been cut off from the basin in the sleeping room of the persons attacked four months before and the water in the trap had evaporated, leaving an unobstructed entrance to sewer gas. This danger has not been overlooked by the department; for two years the following circular has been given to every householder who notified the police that his house would be vacant during the summer, and has also been published in the daily press.

"The Commissioner of Health desires to direct the attention of householders to the danger of occupying houses which have been for any considerable time unoccupied. It is the practice of many persons to leave their dwellings for several months in the Summer, during which time the water in the traps of basins and other fixtures is liable to evaporate, and thus permit the unobstructed entrance of sewer gas into the dwelling. When the families return in the Fall they are exposed to these sewer emanations, and it is believed that cases of serious, if not indeed fatal, sickness have been due to this cause. Whenever houses are so left, provision should be made to have the traps filled at least every two weeks by a competent and trustworthy plumber, and, if possible, to have all the windows of the house opened for twenty-four hours before its reoccupation."

The privy-vaults have been the constant objects of attack by the department, and thousands have been abolished. So far as the examination has been made every house in this section of the city has long ago abandoned the yard vaults, first cleaning them and then filling them with earth, and have water-closets discharging into the sewer.

The sewers of this section, at the request of the department, have been thoroughly examined by Mr. Goff the Superintendent of Sewers, both as to cleanliness and ventilation. For this purpose where the sewers are large enough the examiners have entered them, where they were too small to enter, lamps have been let down one manhole and the examiner has descended another, and in this way every foot of these sewers has been investigated. Manhole sewers with ample perforations have been found to permit of free circulation of air in the sewers, and to prevent the accumulation of sewer gas. Mr. Goff reports to me that the sewers are clean and well ventilated, and will be kept in this condition.

It has been stated that in the late summer or early fall, some old disused cesspools in this section were laid open. I have endeavored in every way to investigate this report, but can find no other basis than that two brick rain-water cisterns used before Ridgewood water was intoduced were broken into and removed, the cisterns were found dry and inoffensive.

It was thought by some that the decaying vegetation might have some connection with the disease. To remedy this the leaves in the affected district have been daily gathered and removed, and the street basins at the corners kept free from obstruction. The theory was advanced that possibly the old wooden pavement was responsible for the increased prevalence of the disease. It was found that of fourteen streets in which one or more cases had occurred, but two had wooden pavements; and that in other sections of the city in streets where wooden pavements also existed, no cases had occurred.

It has been thought by some that the prevalence of this disease is attributable to extraordinary high tides which occurred early in the fall. How much this had to do with the matter cannot now be ascertained. It will be borne in mind, and the occurrence of a similar event watched with reference to this point. It is very gratifying to be able to state that the mortality is very light, though the number of cases be unusually large.

The measures which are recommended by this department to be taken by every one in that and other localities throughout the city, have repeatedly been given, but, as they are important, are here given again.

First.—To have a thorough examination made of the plumbing of the house to see that there are no defects, and if any are found to have them at once remedied, particularly with reference to thorough ventilation of house-pipes, and the presence of traps disconnecting the house from the street sewer. In this examination this department will aid in every way in its power, but as its force is limited and a long time would be necessary to examine all the houses, responsible plumbers should be engaged for this examination by those who are able to bear their expense, leaving the department to aid those who cannot afford it.

Second.—Special attention should be paid to the thorough disinfection of all discharges in houses where the disease exists. For this purpose chloride of lime of the best quality, four ounces dissolved in a gallon of water, is recommended. Every physician in the city has received a circular from the department giving full directions for this disinfection. This measure is the most important of all, and it should be rigidly and conscientiously performed. To neglect it is to endanger human life and should be regarded as criminal. At the same time the city will do its part in keeping the sewers clean, flushed and, where possible, disinfected, and pay strict attention to the condition of the streets.

The investigation thus far made by the department points to two special influences at work in the propagation of the disease; first, defective plumbing; second, inadequate disinfection of the discharges of the patients. To remedy the first a corps of expert plumbers under the direction of J. J. Powers, chief inspector of plumbing, was organized, whose duty it was to make a complete sanitary survey of the districts specially affected. A preliminary report of this work appears in Appendix D. A full and complete analysis will be made of it as soon as time will permit. This corps was divided into two divisions, one of which visited only the houses where there were patients, and the other only houses where no disease existed. The second influence at work in aiding the spread of typhoid is inadequate disinfection of the discharges. The market is unfortunately flooded with so-called disinfectants, many of which are well endorsed and some of which are of value, while very many are not disinfectants at all; that is, they do not destroy infectious material. The Committee on Disinfectants, of which Dr. Sternberg was chairman, has been at work for the past year and has published the result of its labors, showing the facts to be as above stated. The two disinfectants which have been most highly recommended by this committee are chloride of lime and solution of chlorinated soda. Inasmuch as to some the odor of the lime is unpleasant, the chlorinated soda solution being already prepared is, under the circumstances, best adapted for use at this time. Our townsman, Dr. Squibb, has prepared a solution which is up to the standard necessary for disinfection, and can be procured at any drug-store. Each bottle has explicit directions on the label. This department urgently recommends the use of this solution in preference to all others bearing a proprietary title.

In addition to the force above mentioned there were three disinfecting officers at work in flushing the sewers with chloride of lime. In all, there were assigned to this duty alone, thirteen men. The department is determined to leave no stone unturned to stamp out this disease in Brooklyn; a disease which has existed for many years in all the cities and towns of this and other countries. That this work must be continued for a considerable time, in order that this desirable result may be attained, goes without saying, but the methods now employed cannot but result in good. The hearty co-operation of citizens and the medical profession is earnestly desired in permitting a full and free examination of domiciles, and in carrying out thoroughly and conscientiously the measures of disinfection recommended, inasmuch as they have stood the most rigid tests, and abandoning other methods, even though they may be largely endorsed.

The Department of City Works is daily flushing and cleaning the sewers, and has been requested to place perforated covers over all man-holes where there are now solid covers. Thousands of these have already been changed and the work will be continued as fast as possible.

CONCLUSION.

The thanks of the Department are due to the Departments of Police and City Works, and especially to Mr. W. H. Goff, Superintendent of Sewers, and Mr. W. J. Tate, Superintendent of Streets, for the aid given by them.

I desire to express my thanks to the Hon. Aaron Brinkerhoff, Comptroller of the city, for the readiness which he has always manifested to aid the department in a most material way whenever the exigencies of the circumstances demanded it.

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In closing this report, the fourth which I have the honor to submit, I desire to record my conviction that the condition of the city, from a sanitary point of view, is better to-day than ever before in its history as a city. I also wish, in this my final report, to acknowledge the assistance which you have given to this department in all its efforts to contribute to the improvement of the public health, without which aid the department would not have been able to accomplish a tithe of what has been accomplished during your two terms of office.

I am respectfully,

J. H. RAYMOND,

Commissioner.

APPENDIX A.

Special Reports by Chief Chemist E. H. Bartley, M. D., on food supply, laboratory work, inspections and analyses of meat, milk, canned goods, soda water, beer, coloring matters, adulterations, drugs, wall papers and various substances having relations to the Public Health; with special reports by Chemists W. H. Kent, Ph. D., and Otto Grothe, Ph. D.

CIAL REPORT BY E. H. BARTLEY, M. D., CHIEF HEMIST, ON LABORATORY WORK DONE IN RELATION TO FOOD SUPPLY.

have the honor to present herewith a condensed annual ·t of the work done in the inspection and analysis of foods.

vould beg to call attention to the fact that, with the excep- of meat and milk inspections, next to nothing was done by Department in the general inspection of food, previous to .

uring that year the inspection of meat and milk received ge part of our attention.

t only was the milk inspected within the city, but, during nost of the year, a somewhat systematic inspection of the stables in the suburban towns was for the first time, as far am aware, carried out.

e inspection has been continued during the year 1885, vith very salutary results.

e object of these inspections has been to control the of the cows producing milk intended for consumption e city, to prevent the milk of sick cows from reaching narket, and to improve the general sanitary condition of tables. The number of stables outside of the city, furn- g milk to this city, and which have thus been under illance, is about 152, containing 3,900 cows, which sh, as nearly as can be ascertained, 34,200 quarts of per day, or 12,483,000 quarts per year. Within the city are about 266 stables, containing about 1,840 cows, furnish about 18,018 quarts (4,504½ cans) of milk daily, 44,142 cans per year. The very objectionable practice of feeding distillery waste, a practice that three years ago was, during the cold weather, almost universal, has been almost entirely broken up. This result alone is of incalculable benefit to the consumers of milk, as such milk is without doubt a dangerous food for infants, especially in warm weather.

This fact has been so well established that it needs no argument here.

The number of complaints made against milkmen for various causes during the year was 176; the number of convictions, 168. While this is not a large number of prosecutions the moral effect is very marked.

This, in fact, is the chief end to be attained in all milk inspections, and that system of inspection must be considered the best that will produce the greatest moral effect.

The health of milch cows is another important matter, which we have endeavored to supervise as far as possible. A cow, to give normal milk, must have a normal temperature. Feverish animals usually, if not always, give acid milk and of abnormal composition. Evidently, the milk from very sick cows ought to be excluded from the market, and we have, when possible, excluded the milk of sick cows wherever found.

In the case of contagious pleuro-pneumonia, it is certain that for the purpose of checking the spreading of the disease isolation ought to be insisted upon. At present it is impossible to carry out such an isolation. To do this would require one inspector to do nothing else. In my opinion some such course should be adopted by which a cow, when discovered to be sick, with either contagious pleuro-pneumonia or tuberculosis, could be at once removed from the stable and taken to an infirmary, and kept at the expense of the owner until recovery or death takes place, unless he chooses to order the animal killed. In this way a double evil would be prevented—both the milk and meat of sick animals could be kept from the market. The expense attending the establishment of such an infirmary would be a small matter in comparison with the benefits that would result from it. In the inspection of the milk of large cities like New York or Brooklyn, I am of the opinion that it is not sufficient to submit the milk to the usual tests of analysis. While this is of great importance, it seems to me that a more important matter has been almost entirely overlooked or neglected, viz: the inspection of the source of the milk. The ordinary methods of analysis are not competent to determine the question of wholesomeness of milk in many cases.

So far as I know no other city in the United States has attempted such a systematic examination of the cows producing the milk brought to its market.

With reference to the number of cases of contagious pleuro-pneumonia on Long Island last year, (1884), we find that out of 1,867 stables and 6,770 cows inspected by the authority of the Bureau of Animal Industry of the Department of Agriculture (see report for 1884, page 167,) the disease was found in 119 stables and in 327 cows, or in 87 per cent of the stables visited and in 33 per cent of the cows.

These numbers apply to all stables examined on Long Island.

It is a well known fact among veterinarians, that tuberculosis among milch cows is very prevalent.

Professor Law states that "20, 30, or even 50 per cent of certain herds that supply New York city with milk are affected with this disease" "In some country districts of New York can be shown large herds with 90 per cent. the subjects of tuberculosis."*

The evidence in regard to the contagious nature of tuberculosis, and to the possibility of its communication to man by the meat and milk of tuberculous animals is becoming so strong that further doubt is impossible.

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*Report of the Department of Agriculture on contagious diseases of domesticated animals, 1883-1884, page 168.

Dr. Charles Creighton, of the University of Cambridge believes that bovine and human tuberculosis are identical and mutually communicable. He says in the *London Lancet* for June 19, 1880, that he believes that an outbreak of supposed typhoid fever, which occurred in the Industrial School was in reality not typhoid fever, but bovine tuberculosis.

Dr. Lydtin, of Carlsruhe, in a lengthy report upon tuberculosis to the International Veterinary Congress held at Brussels in September, 1883, concludes, among other things:

"That there are clinical observations, proving the transmission of tuberculosis from animals to man, through the use of the milk of phthisical animals. That tuberculosis is contagious, like glanders or lung plague, and that contagion fills a more important rôle than heredity in the propagation of the disease." Jahne, in a tabular statement of the results of all the experiments he could collect in 1882 upon the feeding of tuberculous matter to various kinds of domesticated animals, states that out of 322 animals thus fed, 43.5 per cent. took the disease, 51.1 per cent. did not, and in 5 per cent. the result was doubtful.

A large number of experimenters have investigated the transmission of tubercle, and the results are convincing and conclusive.

These experiments seem to leave no room for doubt that the disease can be transmitted from animal to animal and from man to animal, by feeding upon tuberculous matter. The evidence that the disease can be communicated from animals to man is not so abundant, but there is enough to make it more than probable. It seems to be pretty generally admitted by European veterinary authorities that both the meat and milk of tuberculous cows may transmit the disease to man. Dr. Kammerer, city physician of Vienna, in a circular to the magistrates of that city, says that he regards infection by tuberculous meat and milk as being quite as fruitful a source of this disease as heredity, to which it is usually traced. Prof. Jahne of Dresden considers it well proven that the milk of tuberculous cows is as capable of communicating the disease to man as to their own offspring.

He remarks that "the matters which most certainly transmit tuberculosis by gastro-intestinal ingestion are tuberculous matter from the pleura, lungs and lymphatic glands; near to these, as regards its contagious properties, must be placed the milk of tuberculous animals." Of the 322 experimental animals above mentioned, 91 were fed upon milk of tuberculous cows. Of these 30.7 per cent. became infected, and 59 per cent. did not.

Stang mentions a case of the accidental infection of the son of healthy parents by habitual drinking of warm milk from a tuberculous cow. Prof. Demme of Berne mentions a similar case that came under his observation. Without going further into the subject we can see the extreme importance of careful inspection of all cows whose milk is to be used for food. If 30 per cent. of the tuberculous cows give infectious milk, as would seem to be indicated by the figures above quoted, or probably even a larger proportion, if we consider that some of the animals may have been insusceptible, we may get some idea of the dangers from such milk. It is estimated that about 17,000 cows furnish milk to the city of Brooklyn. Of which number, if we take 5 per cent. or one half the lowest per cent. mentioned by Prof. Law, as existing in our stables, as the probable number of cases of this disease, it would give 850 infected cows, furnishing daily about 6,800 quarts of milk, 2,000 quarts of which may be regarded as infectious.

The subject is given interest by the experiment of Gerlach, in feeding 15 animals with cooked tuberculous matter, by which 10 were infected, and by the statement of Klebs, confirmed by Ballinger, that simple boiling does not destroy the infectiousness of tuberculous milk.

Of pleuro pneumonia it may be said that there is no reliable evidence to show that the milk of animals so affected can transmit the disease. It can be said, however, that the milk is abnormal in character, and therefore should not be used, especially as a food for young children. Accordingly, the milk of cows sick with this disease, when in the febrile stage, has been excluded from the market.

Any disease, whether contagious or not, which produces a continued febrile condition for a number of days, must be regarded as sufficient cause for excluding the milk of the cows so affected. The character of the food of cows is known to produce a marked effect upon the milk. This has been demonstrated time and again by analysis and by clinical evidence of the most striking character.

The most objectionable foods met with in this city and vicinity are distillery waste and hotel swill or "garbage."

During the year 13 offenders have been punished, either by fines or revocation of permits for using improper food. I must here express my conviction that brewery grains, as now usually fed in many stables in and about the city, that is, with a handfull of meal or middlings, and very little hay, is not to be recommended as the best food for milch cows. When fed in this way the milk is almost universally acid in reaction, and the fat globules are small and have a tendency to cohese together. Brewery grains become sour in a few hours after leaving the brewery, and are almost always fed in this acid condition. This strongly acid milk is more indigestible than neutral or alkaline milk, and all authorities on infant feeding agree that acid milk should not be fed to infants.

The regulations of this Department, as well as the laws of the State, permit the use of this food, although the weight of the testimony, in a recent discussion at a meeting of the American Society of Public Analysts, was against their use as the principal food of cows giving milk.

In regard to filthy stables, a large number of complaints have been lodged against offenders in this respect. The number of cases of this character that we have found it necessary to complain of is about 100.

I am glad to be able to say that the result of the work in this direction is very marked. In every respect the milk supply of Brooklyn is better than it has ever been before. While this is a perfectly safe statement, it will be seen by reference to the report of the milk inspector, Dr. De Long, which is here appended, that but a very small part of the milk coming into this city can be inspected by one man. By reference to the report, as well as to the tabulated report of inspections by months, it will be seen that between 6,000 and 7,000 quarts per month, or an average of 200 and 350 quarts per day have been examined, while over 150,000 quarts enter the city each day.

As to the methods by which this inspection is made so efficacious in its effects upon the milk supply, I leave the report to say ; it needs no words from me to commend the energy and zeal with which this part of our work has been carried on ; the results speak for themselves.

It must be evident, however, that the field is too great for one inspector, and it is to be recommended that an additional milk inspector be employed next year. I also insert a brief review of some of the methods of milk analysis in common use, with comparative tests made with these methods by the chemists, Doctors Kent and Grothe.

MEATS, FRUIT AND VEGETABLES.

The meat of diseased animals frequently finds its way into the markets, and is sold for human food. One of the dangers to the public health from this source has already been alluded to, when speaking of milk of tuberculous cows. This is probably one of the most specifically dangerous meats likely at present to find its way into our markets. The meat of animals, which have suffered with pleuro-pneumonia, swine plague, or hog-cholera, septicæmia or milk fever, trechiniasis, cysticerci, &c., may also be occasionally met with.

Of these, but three are known to be communicable to man, viz: Septicæmia, trichiniasis and cysticerci, and then only when eaten in the uncooked, or imperfectly cooked state. The inspection of the meat slaughtered in this city, at the time of killing, has been very thoroughly carried out.

By an arrangement with the proprietors of the slaughtering houses, one of the meat inspectors is always present at the time of killing, and has an opportunity of seeing the animals both before and after they are slaughtered. By this arrangement very little diseased meat escapes detection. Less complete results can be claimed for the inspection of the meat brought in from New York and the West. This is daily inspected, as far as it is possible, in the butchers' stores and in ice boxes. When meat is discovered which is unfit for human food it is treated with some substance rendering it incapable of being used, and then turned over to the offal contractor. The following tabular statement of the amount of meat condemned, and of animals slaughtered in the city, for the year ending Nov. 1, 1885, will give a good idea of the amount of work done in this line. The work here represented does not include the inspections made by the Veterinary Inspector.

As will be seen by inspection of the accompanying table, an average of 324 visits to slaughter houses have been made each month, or a little over ten each day. An average of 73 packing houses, 304 fish stands, 739 grocery stores, 3,331 butcher shops (meat markets), 162 cow stables and 130 market wagons have been inspected, making a total of 5,063 inspections per month, or of 168 inspections per day. This work has been performed very largely by the two meat inspectors.

During the eleven months of this year, there were condemned, 71,867 lbs. of beef, 4,830 lbs. of veal, 3,685 lbs. of mutton, 4,280 lbs. of pork and 1,175 lbs. of poultry; total quantity of meat unfit for food which was prevented from being sold was 85,837 lbs., or nearly 43 tons, or 3.9 tons per month.

This large quantity of unwholesome meat would have been sold and eaten by the citizens of Brooklyn but for the watchfulness of the Inspectors.

How much diseased meat would be sold if no inspections were made?

It will be observed that 32 animals were condemned for tuberculosis. In view of some statements above made in regard to the infectiousness of such meat, we might ask how many cases of consumption might have been developed from eating underdone steaks from these carcasses, if they had not been condemned.

What we have said on the subject of tuberculosis among cows, and the dangers of milk from them, applies also to meat, with this difference: While milk is largely consumed in the raw state, meat is usually more or less cooked. Many people are in the habit of eating their meat underdone, and the temperature to which the centre of the meat is raised is, in many cases, not sufficient to destroy the life of the tubercular organisms. It is principally for this reason that the flesh of tubercular animals is condemned. It appears from the above table that an average of about 1,100 cows have been inspected each month. This estimate is too low, as it did not not include those inspected by the veterinary and milk inspectors. Probably 2,000 cows have been examined every month, and these are such as furnish milk to be sold either in Brooklyn or New York. It should be remembered that the greater number of these cows are kept outside of the city of Brooklyn, in Queens County, and we have therefore done work which, in reality, should be done by the State authorities. The effect of this inspection has been most salutary.

During the summer months a large quantity of various kinds of fruits and vegetables was destroyed by the inspectors. No estimate can be put upon the quantity destroyed, but great good must have come from the destruction of this decaying fruit and vegetables. During the month of August it was estimated that a ton weight of cucumbers which were in a decaying state were destroyed. The benefits of this action in regard to vegetables and fruit, as in all other inspections, cannot be measured by the quantity actually seized, but by the moral effect of the inspection upon those who are likely to be careless, or intentionally perverse. By the frequent agitation of these subjects the public become more careful as to the quality of their purchases, and to a limited extent every buyer becomes a private inspector.

GENERAL FOOD INSPECTION.

The practice of adulterating food has become so prevalent within the past few years that it seems necessary for the public to rise up in self protection. It is unnecessary to state that a large proportion of the adulteration that is practiced cannot be considered as " dangerous or detrimental to health," but is rather a commercial fraud.

There are, therefore, a large number of adulterations being practiced, and with little, if any, attempt at secrecy, which we have not felt called upon to investigate. Our attention has been directed only to those which could be regarded as *injurious adulterations.* Thus, when wheat flour is mixed with rice or corn flour the buyer may be swindled, but he buys a wholesome food nevertheless. When tea is mixed with willow or sloe leaves, or exhausted leaves, it is a fraud practiced upon the consumer, but a comparatively harmless one, so far as the wholesomeness of the tea is concerned.

When, on the other hand, gypsum or white clay is added to flour, or Prussian blue is added to tea, the question is not one of mere fraud but one of wholesomeness. In determining what should be regarded as an injurious adulteration we cannot be governed by the effect of the substance in question upon healthy men and women, but as well upon invalids and weak children.

This is a point frequently lost sight of by even physicians and scientific men. The invalid has the same right to protection as the athlete, and the most delicate child as the strongest man. A given substance should be regarded as injurious and subject to prohibition if it can be shown that it is injurious when given as food to any class of invalids. In relation to the quantity of an injurious substance which may be allowed as an article of food authorities differ. It seems to me that no limit should be put upon confessedly dangerous substances short of their total absence.

Some substances, as lead, mercury or arsenic, when taken in very small doses, seem to work very little, if any, harm until a considerable quantity has been taken; then, perhaps suddenly, the cumulative effect is obtained, which may produce very disastrous results. The material is stored up in the system until a poisonous dose is accumulated. Manifestly, these substances should not be allowed in articles of daily food in any quantity whatsoever. The chief excretory organs are the kidneys. The kidneys are designed to excrete certain waste products, which are of no further use to the body, and which it has the power of separating from the blood. As long as these organs are not called upon to do excessive work, or to separate from the blood substances which are abnormal to it, they carry on the work properly. When an abnormal substance appears in the blood, an entirely abnormal work is put upon them. The result is either irritation or overwork, and, if long-continued, disease.

Upon this subject Dickinson, in his Treatise on Albuminuria (Woods Library), p. 29, in speaking of the causes of inflammation of the kidneys, says: "It may be generally stated that this inflammatory affection arises from unnatural stimulation of the kidneys. The blood is charged with material excessive in quantity or unnatural in quality, which these glands take upon themselves to remove. Their own proper elements of secretion are poured upon them in sudden and excessive amount, or matter is thrown upon them which is foreign to their usual habit. As a consequence of overwork, or of work to which they are not adapted, they take on turbulent and abnormal activity. They become congested, the tubes get choked up with epithelial growth, and the disease is established." Again, on page 83, he says: "Thus it appears that inflammation of the kidneys may be set up by a great variety of irritants." "The severity and duration of the inflammatory attack depends much upon the nature of the cause." On page 81, he says: "It is by no means necessary that a fatal dose should have been taken in order to produce the renal symptoms." These quotations from a recognized authority are given to show that the position above taken is not extreme.

Some of the substances which are known to act as irritants upon the kidney, and which have also been found in articles of food in this city, are lead, alcohol, turpentine, copper, arsenic, boric acid, salicylic acid, fusel oil, &c. These remarks apply to healthy persons. It is a well-known fact that there are in every community a certain number of persons suffering with an established disease of the kidneys, and some of these without being aware of it. If these substances have the power of inflaming healthy organs, they must be more irritant to those already inflamed. It is this class of persons which compels us to take extreme ground in determining what substances shall be regarded as dangerous adulterations, a position which at times may seem to be almost unjustifiable. Substances which are used temporarily as medicine for a definite purpose, may become a poison when the action is kept up for months, or even years. From these considerations, and others, we may conclude *that any substance which is abnormal to natural human food, and which is known to possess irritant properties, and is not destroyed in the body, should be regarded as an injurious, a dangerous adulteration, when added to articles intended for human consumption.*

The following is a list of substances analyzed in the laboratory during the eleven months ending Nov. 30th, 1885, with the results in brief.

This does not pretend, however, to represent the work of the chemists, as they have been called upon to do other than analytical work.

They have been from time to time detailed to make milk inspections, soda water inspections, disinfection experiments, &c., &c. These analyses, therefore, represent only a part of their work.

Table of Laboratory Work, 11 *months ending November* 30, 1885, *including food, candy, drugs and other matters.*

Articles Analyzed.		Result.
95 Samples	Preserved fruits and jellies	94 with tin; 37 with copper.
1 ..	Can of tomatoes	4.5 mgm. tin, 13.5 mgm. lead, 30 mgm. copper.
2 ..	Cans of tomatoes	Both with lead and copper.
1 ..	Gelatine	Poor quality.
1 ..	Ice cream	With gelatine.
24 ..	Milk	Four watered.
7 ..	Butter	Genuine.
1 ..	Condensed cream	Not good.
2 ..	Evaporated milk	Skimmed before evaporated.
2 ..	Goats' milk	
7 ..	Condensed milk	5 partly skimmed.
2 ..	"Hygeia" water	(See table.)
1 ..	Squibb's Distilled Water	(See table.)
44 ..	Ridgewood water	(See table.)
15 ..	Miscellaneous waters	(See table.)
4 ..	Sediment from Ridgewood water	Organism.
2 ..	Pickles	One with 8 mgms. copper; one with 14 mgms. copper.
1 .	Red beets	No foreign color.
2 ..	Mustard	
4 ..	Pickles	Three with copper.
2 ..	Beer	Three contained zinc; one contained copper.
1 ..	Beer residue	
1 ..	Whiskey	Contains tannic acid.
3 ..	Beer	All contained zinc and copper.
3 ..	Ale	All contained copper, lead and zinc.
1 ..	Filter	
1 ..	Cocoanut candy	Adulterated.
92 ..	Candy	Eighteen colored with lead chromate.
18 ..	Candy colors	One was lead chromate.
17 ..	Wall papers	Fourteen contained arsenic.
1 ..	Erin go Bragh flag (green)	Colored with arsenite of copper.
1 ..	Self raising flour	
1 ..	Cracked oats	
1 ..	Baking powder	

Table of Laboratory Work.—Continued.

Articles Analyzed.		Result.
1 Sample	Cream of tartar	Impure.
1 ..	Frosting powder for cakes	
1 ..	Baby hood (poison suspected)	
11 ..	Cretons	Nine contained arsenic.
9 ..	Flannels	
1 ..	Laundry gloss	
1 ..	Pair cuffs	
8 ..	Stockings	Four contained antimony.
1 ..	Glazing powder for coffees.	
3 ..	Coffee colors	
1 ..	Sewer sand	
2 ..	Disinfected rags	Found SO_2 in one.
1 ..	Disinfectant	
19 ..	Vinegar	
2 ..	Pepper	One was adulterated.
1 ..	Ear drops	
1 ..	Quinine Sulphate	
2 ..	Persian insect powder	No arsenic.
3 ..	Rough on Rats	Consisted mostly of arsenic.
1 ..	Rat destroyer	Phosphorous.
1 ..	Bedbug poison	Potassium cyanide.
1 ..	Packing material	Wool.
1 ..	Cow's stomach	Lead.
1 ..	Child's stomach and intestines.	Copper.
1 ..	Meat preservatives	One with alum; both with borax.
8 ..	Soda waters	Two contained traces of copper.
1 ..	Fruit syrups	Colored with cochineal.
1 ..	Lemon syrup from metal tank	Contained tin and antimony.
5 ..	Tea	
2 ..	Yellow cake	
1 ..	Peach cake	Mould the only poison.
1 ..	Sugar	
116 ..	Fabric colors	(See Report on Sulphur Experiments.)
2 ..	Equine calculi	Ammonio-magnesium phosphate.
1 ..	Tin pipe	
4 ..	Geyser waters	

FOOD PRESERVATIVES.

There are in the market a number of preparations used to preserve foods of various kinds. These are sold under the names of "Preservaline," "Rex Magnus," "Fruitaline," "Fruit Preserving Compound," "Boro-glyceride," and other trade names. The most of these preparations have been examined and found to be mixtures containing borax, boric acid, salicylic acid or saltpetre. Of these preparations the ones least objectionable are those composed of salicylic acid and sugar, viz: "Fruitaline" and "Fruit Preserving Compound," used to preverve fruit put up in glass jars. I do not think it should be recommended for general use. "Rex Magnus" has been used in this city to preserve milk from souring in hot weather.

Its use was promptly stopped when discovered. A preparation containing borax, saltpetre, alum, and a red coloring matter, composed principally of a native oxide of iron, has been used by some sausage manufacturers, both as a preservative and as a coloring agent, to impart a bright fresh meat color to the sausage. The use of this compound was also prohibited, and the sale of meat treated with it stopped.

The objections to these preservatives, independent of the particular cases here mentioned, are, that they are composed in part, at least, of a substance foreign to the body, or natural food, viz., boric acid. Schmidt's Jahrbücher for 1882, mentions a case of undoubted poisoning following the injection of a four per cent. solution, for chronic diarrhœa. The *Medical Times*, August 25th, 1883, contains the report of a case of fatal poisoning, by the application of powdered boric acid to an ulcer on the thigh. The case is reported by Dr. L. D. Brose. The symptoms were those of gastro-intestinal inflammation, with obstinate diarrhœa and vomiting, rapid weak pulse, low temperature, intense acidity of the urine, and almost complete suppression of the same. At the autopsy the liver and kidneys were the principal organs affected, and they were greatly congested. Dr. Foster has made this subject the basis of experiment. His conclusions are, that borax or boric acid increases the waste of tissue, as shown by the increase of urea (and I think uric acid), and that the kidneys are irritated by its excretion, Potassium nitrate or saltpetre is also well known to act as an irritant to the kidneys, as well as to other organs. Of salicylic acid, Dr. Brunton says: "During its excretion it frequently irritates the kidneys, and produces albuminuria. At least one, and probably two cases, have come to my notice, where salicylic acid has been taken for a long time, and with fatal result, due to Bright's disease supposed to have been either developed or aggravated by this agent. Salicylic acid is excreted by the urine, and a large part of it undecomposed. Almost the only use made of salicylic acid in food, with which I am acquainted, is to preserve canned fruits.

COLORING MATTERS.

A great variety of coloring matters have been used in articles of food. Many of these colors, so far as we know, are harmless, while others are very poisonous.

The use of coloring matters in milk and butter, canned fruits and jellies, colored stockings, fabrics, toys, wall paper, green pickles, macaroni, confectionery, sausage, head cheese, &c., have been investigated to a considerable extent.

The practice of coloring butter with anatto is quite common, especially in winter. The addition of the same coloring matter to milk has undoubtedly been used, but we have not detected it, because we have not examined especially for it.

A sample of coloring matter intended and sold for this purpose is in my possession. It seems to be an alkaline solution of anatto coloring matter. This sample was sent from Boston, and was brought to this office by Mr. Rushmore of 100 Atlantic street.

Some artificial jellies have been sold in this city which are made from gelatine, sugar, artificial flavoring extracts, cochineal or aniline red.

A somewhat extended examination of the colors used by wall paper manufacturers has shown that they very frequently contain considerable quantities of arsenic. Some of these colors, which are usually bought in the form of powder or a thick paste, contain as high as five or more per cent. of arsenic. This matter was made the subject of the appended special report dated March 27, 1885, which was followed by a hearing of the case and proper action for the suppression of the use of arsenical colors.

The examination of a few samples of cretons, flannels and stockings showed that arsenical colors are frequently used in their manufacture. The colors most likely to contain arsenic, according to our examinations, are scarlets, pinks, maroons and the reds in general. There can be no doubt that a certain amount of injury to health is done by arsenic derived from the numerous colors in common use on fabrics, wall paper, glazed paper used in kindergarten schools, toys, cardboard, &c.

Fatal cases of arsenic poisoning have been traced to arsenical wall papers. It is not alone the fatal results to which I refer, but various manifestations of poisoning which lead to more or less protracted ill health, such as coryza, conjunctivitis, bronchitis, gastric catarrh, gastritis, gastro-enteritis, troublesome eruptions and fatty degenerations of the internal organs. Many of these complaints, when caused by arsenical poisoning, are attributed to other causes, and may go on to a fatal termination without their true nature being discovered. Or, if they do not do more, they cause the person great suffering. It is unnecessary to cite cases in support of these statements as they are already matters of toxicological literature.

I may, however, mention two cases of poisoning from tartar emetic, contained in stockings worn by the persons so poisoned.

The first occurred in the spring of 1883, in the practice of Dr. Walter Fleming of New York City. The patient, a lady music teacher, bought a pair of fine cotton hose of a reliable house in that city, and wore them about six days when she noticed an eruption on both legs. She put off the hose and had them washed. The eruption improved somewhat, and after an interval of a few days she again wore them; the eruptions again appeared, but as a severe pustular eruption, accompanied with fever, gastro-enteric symptoms, depression, &c.

She was obliged to remain in bed for some time and was attended by Dr. Fleming. The symptoms were so severe and protracted that the doctor was convinced that the stockings must contain some poison. They were submitted to me for examination. They were found to be dyed with shumac and iron to give a black color. They were then dyed in fuchsine (anilin red), and this color was fixed with tartar emetic. A quantitative analysis showed antimony corresponding to about 17 grains of tartar emetic in the two stockings.

A suit for damages was begun, but was compromised without trial.

The second case occurred in the practice of Dr. Arnold Stub, of this city, to whose kindness I am indebted for the following history:

The subject, a boy 9 years of age, began to wear a pair of red stockings on the 23d of May. The stockings were purchased at a large store on Grand street, New York city, and had been washed once previous to wearing. After wearing them for two days an eruption was observed on those portions of the legs covered by the stockings, which soon assumed a pustular character. This eruption was not accompanied with any marked systemic symptoms, but was very persistent, continuing until about September 1st. At this time it had assumed an eczematous character. The stockings were secured at this time and tested, with the result of finding antimony in considerable quantity. I visited the store and procured another pair of the same kind of stockings, which on analysis were found to contain the same poison. The matter was then referred to Dr. Edson of New York, who has since then stopped their sale.

The colors used by confectioners have received considerable attention during the year. (See special report of August 20 and 25, 1886.) With few exceptions the colors were found to be vegetable colors, or coal tar colors. The exceptions were carmine and chrome yellow. Of these colors objection can only be made to the chrome yellow (chromate of lead), and to samples of the coal tar colors which contain arsenic. Where candies were found colored with chromate of lead they were seized and destroyed. But one complaint was made, and that against a manufactory using this poisonous color.

The complaint in this case was withdrawn, on the strength of the sworn statement by the defendant that hereafter he would use no colors until they had been examined and pronounced safe by a competent chemist.

In the case of arsenical wall papers, the manufacturers agreed to the same proposition as the above, and I believe that they are fulfilling the agreement. In regard to the use of coloring matters used in preparing composite meats, I think the matter is fully stated in the special reports upon this subject, dated June 3d and March 14th. The Court sustained the opinion there expressed and imposed a fine upon an offender prosecuted.

In the latter part of last year it was discovered that chrome yellow was being used by certain manufacturers of maccaroni and vermicelli to imitate the yellow color given by eggs to the genuine articles. As eggs are sometimes very costly it has become almost a universal custom to dispense with them in a number of articles of food, and, where deemed necessary, to give the color they would give, by saffron, turmeric, chrome yellow, or naphthaline yellow. About 1,200 lbs. of maccaroni were destroyed about the end of the year because of the fact that it was colored with chrome yellow. One manufacturer was arrested and fined fifty dollars. (See special report, dated October 30, 1884.)

On May 23d, 1885, I made a special report to you, with recommendations, in relation to the practice of "greening" pickles with copper. On June 26th, after consultation with all the manufacturers of pickles, you issued an order prohibiting the selling, or having for sale in this city, of pickles so colored. Before this order was served upon the dealers throughout the city a sad illustration of the justice of this action was brought to our notice by Dr. Callahan, of Vanderbilt avenue, this city. It was the case of a little girl, who died under such circumstances as to place it beyond doubt that a portion of a pickle "greened" with sulphate of copper was the immediate cause of death. It is fortunately a very unusual thing for our efforts toward the suppression of harmful adulterations, to be so soon appreciated, as in this case. For the particulars of the history of this case see the special report dated July 3, 1886. This history may serve to convert some of those who proclaim that copper is a harmless adulteration.

Permit me here to refer to another subject from last year's work, which has claimed a portion of our attention during this. I refer to the practice of coloring and polishing coffee, as carried on by two firms in this city doing business on Furman street.

The investigations which led to my reports of May 17, 1884, June 16, and September 30, 1884, were suggested by an analysis of green polished coffee, made by Professor Waller at the request of Dr. Edson of New York city. In this analysis, Professor Waller found that arsenite of copper had been used as the coloring agent.

There was no claim made that the coffee in question came from the mills of this city, but it was thought necessary to examine into the colors used at the mills.

Among other colors found there were three to which objection was made, viz: Prussian blue (ferrocyanide of iron), chrome yellow mixed with ochre and called by them chrome orange, and another color obtained at another time which proved to be chrome yellow containing an abundance of arsenic.

At the hearings held at the office of this department, May 12th and 17th, 1883, Prof. Morton was present in the interest of the above mentioned companies. In answer to a question he said:

"I should say that Prussian blue I should regard as objectionable. But the question might be raised whether in the course of roasting, if the temperature is high, other substances present might not decompose it. I should rather be in favor of not using it." In regard to *celestial blue* he said: "That is also a substance I recommend not to be used. One specimen I examined contained Prussian blue mixed, apparently, with sulphate of barium."

In regard to chrome yellow there was no question but that it is positively harmful, even in small quantities. The object of the polishing and coloring process, as explained by the companies, is to clean the coffee and then to impart any desired color, so as to make it more attractive and more saleable. As Prof. Morton agreed substantially with the opinion expressed in my special report, the use of the colors there objected to was prohibited. At a later date a color was obtained at one of these mills, which on examination was found to contain an abundance of arsenic and chromate of lead.

The foreman explained that it was a color sent to them for trial, and they had used but a small part of the barrel. This investigation shows the necessity of great care on the part of manufacturers using colors on articles of food and wearing apparel, to see that no poisonous colors are used. Even the wholesale dealers do not seem to know the composition of the colors they sell. Most of the colors are bought and sold under trade names which do not indicate their composition.

The question of the fraud upon the public committed by the process of coloring coffees is not here considered. That question, as elsewhere remarked, is not interfered with in this city, although some action in this direction is much needed.

FOOD POISONING.

Not a little has been said and printed, within the past two years concerning the dangers to the public health from eating canned goods. A number of cases of poisoning from this cause have been reported in this city as well as in other parts of the country. Most of these cases when investigated are found to be without foundation in fact. Several such cases have come under my observation, and in most of them I was not fortunate enough to secure a portion of the food eaten, so as to make an analysis. An analysis of a can which happened to be shipped in the same box with those complained of cannot be of much value in such cases, because it may have been totally different from that producing the sickness. That canned meats, vegetables, &c., put up in tin or glass packages may ferment and putrify no one can deny. That putrid meat or decayed vegetables, under such circumstances, may cause sickness is equally certain. That putrid food can be detected by the senses, if proper care be exercised, is very probable in most cases. Putrid meat contains certain substances which have a very disastrous, though seldom fatal effect, upon those who eat it. The same can be said of certain vegetables rich in nitrogenous organic matter, as for example, peas, beans, tomatoes, &c.

Putrid fermentation is caused by the growth of microscopic organisms collectively called *bacteria.*

The results of the growth of these organisms in moistened organic matters vary with the organism and the conditions under which it grows. This principle is abundantly shown by experiments with artificial cultures under controllable conditions. One condition very marked in its effect, as determined by Pasteur, and others after him, is the supply of oxygen. The same organism when cultivated in a liberal supply of air or oxygen, may produce very different results when injected into the circulation of an animal, from those given by the same organism when it has been cultivated with very little oxygen. Certain disease-producing organisms when cultivated in the latter condition—with very little oxygen—are very much more virulent than when cultivated in a free supply, or in solutions subjected to oxygen under pressure. Now, this is probably true also of certain of the putrefactive organisms. When cultivated in a closed can or jar, with very little oxygen, they become very powerful in their injurious effects upon the living animal organism. Putrefactive bacteria are capable of growth, and, indeed, thrive in the alkaline contents of the intestines of man, where they may frequently if not always be found. According to the variety of bacterium that is introduced so will the action be. If the lactic ferment be swallowed we may expect lactic acid fermentation; if putrefactive ferment is taken we shall have a putrefactive change, with a splitting up of fats and the production from protein substances of leucin, tyrosin, ammonium compounds, sulphuretted hydrogen, carbon dioxide and nitrogen. There are also produced certain alkaloidal bodies which have received the name of *ptomaines.*

By most chemists the effects of eating decayed meats are attributed entirely to these alkaloids, and the effects of the organisms producing them are ignored. I am inclined to the belief that the latter element in such cases has not been given due credit.

Sickness from eating thoroughly well-cooked meats is, in my experience, of very unusual occurrence.

The most of the authentic cases coming under my notice have been due to food not recently cooked, and in most cases after it had begun to mold. In other words, the food was at the time in a state of active decomposition, and it would be difficult to separate the action of the micro-organisms from the products of their growth. If the action be alone due to the alkaloids, are these all produced in the food before it is eaten, or may they be produced within the alimentary canal? It is a well-known fact that matter in the earlier stages of decay is much more dangerous than the same matter in a more advanced stage. Cadavers, which have been dead but a few days, and before decomposition is well marked, to outward appearance, are much more infectious than those which have undergone advanced decomposition. These facts do not seem to accord with the idea that the cause of the poisoning is an alkaloid, or alkaloids developed by the putrefaction; for, the further the process is advanced the less deadly are the products. Probably the instinct that leads the dog to bury tainted meat until it is thoroughly rotten before eating it has some explanation in this fact. In inoculations with the juices of the cadaver, the quantity of material may be extremely small, and yet the result may be very great. The quantity of material in such cases seems too small to act as a chemical poison. It is without doubt a poison capable of multiplication within the circulation or tissues.

It is a practice among certain epicures to keep meats of various kinds until they become tender or slightly tainted. This is especially true of game and poultry, which is frequently preferred after it has developed a slight taint near the larger bones; yet, when well cooked such meat seems to be harmless.

Another fact bearing upon this question is that discovered by Bouchard, who found that the poisonous activity of the ptomaines in human fæces is very great, even when they are quite healthy. A substance obtained from them by dialysis, produced violent convulsions in rabbits. He considers that the alkaloids formed in the intestines of a healthy man in 24 hours would be quite sufficient to kill him if they were all absorbed and excretion stopped.

Recent investigations show that these cadaveric alkaloids are constantly being produced in the intestinal canal and in the tissues in health. They are excreted by the bowels and the kidneys. The quantities of cadaveric alkaloids that can be isolated by the known methods of analysis are small, in comparison with those normally present in the excretions of the body, and do not seem to be more poisonous.

The time required for the symptoms to develop seems to be from three to ten hours, occasionally in less time. The time is therefore longer than would be expected if they resulted from the absorption of alkaloidal poisons. The effects of food poisoning are rather local than systematic, as is shown by the fact that they usually disappear soon after free emesis and purgation have taken place. While this is the rule it is not always the case, however, for we occasionally see more protracted systemic effects lasting for a number of hours and corresponding with the experimental effects of these alkaloids upon the lower animals.

In a large number of cases the symptoms are confined to the gastro-intestinal tract, with only such nervous prostration as would result from the local disturbance. The effects produced, in other words, are purely local and not systemic. In the ordinary roasting of beef the centre of the piece rarely rises above 212° F., and numerous experiments place it as low as 122° F. to 140° F. At this temperature, putrefactive ferment is not killed. Again, in the case of canned goods, the heat to which they are raised is not high, as it is only desired to warm the already cooked meat. and hence the putrefactive germs, if present, are not destroyed. It is evidently a matter of importance that the senses should be intelligently used before canned meats and vegetables are eaten. The importance of this fact is well illustrated by two cases occurring in this city in March and April of last year, upon which I had the honor to present to you special reports, dated March 21st and April 10th, 1884. In the first case the offending material was a can of tomatoes, the contents of which was noticed to have a very light unnatural color and a flat taste unlike that of good tomatoes. The whole of the contents of the can was eaten in spite of this fact.

In the second case, the alleged cause of the sickness of two children was a can of apples, which were confessedly spoiled and set aside as unfit for use.

In a certain number of cases coming under my notice the fruit or meat has evidently been left in the can after opening, until spoiled before eating. This seems, for some unexplained reason, to be an especially dangerous practice. A number of cases of meat poisoning have been investigated by me, to find that the meat had been allowed to remain in a vessel for several days after cooking and had evidently become slightly putrid, without having undergone a sufficient change of taste to reveal it. In one case, occurring in the Eastern District, perfectly wholesome meat was eaten by three persons immediately before attending the funeral of a relative. About six hours afterward they were taken sick and vomited the meat entirely undigested.

This was a case of delayed digestion due to the grief and sorrow of the occasion. There is another class of cases of food poisoning, so called, due to injudicious eating. A very hearty indigestible meal taken at bed time, the practice of over eating of one indigestible dish, or other indiscretion may often lead to an attack of vomiting.

In one case I found that a servant girl who had been made sick by ice cream said: "Oh, I ate all I could, and I know it was the cream that made me sick for I did not eat anything else for my dinner, and went out for the afternoon."

In another case (see special report dated March 18, 1885) a child ten years of age ate six ounces of taffy candy within a short time, and was made sick in consequence.

CANNED GOODS.

During the early part of the year a large quantity of preserved fruits and jellies was seized and destroyed, because of metallic contamination. These fruits were put up in unsealed tin cans. On examination it was found that in nearly every case the can had become corroded, and tin, lead, and copper were found in the goods. (See special reports dated Jan. 12, Jan. 29, and Feb. 14, 1885.)

The quantities of these metals found varied in different cases, but was very considerable. The copper was supposed to be derived from the copper vessels in which the fruit had been heated previous to the canning.

In addition to the above, a considerable number of cans of various kinds of sealed canned goods have been seized and destroyed as unfit for human food because of their fermented condition. But one of these cases has been prosecuted and a fine secured. In this instance, out of a lot of about 30 cans of tomatoes, over one third were spoiled, and yet the owner of the store did not hesitate to sell two picked " swells " at ten cents a can.

A quantitative analysis of these tomatoes showed 3.2 and 3.6 grains of tin respectively, with traces of lead and copper. (See special report of August 25, 1885.) In view of the statements of certain foreign chemists, that canned goods seldom take up more than very small traces of tin or lead from the cans, these results are interesting.

The experiences of the chemists of this department do not coincide with the statement of Prof. Attfield of England, in this respect.

The above mentioned quantities of tin are those obtained from goods known to be spoiled, and are larger than I have ever met before.

This would seem to indicate that spoiled or fermented tomatoes corrode the cans more than good ones, although no analysis of the unfermented cans of this same lot was made. In order to establish this fact it became necessary to make analyses of spoiled and unspoiled cans of the same lot, which we have since done. It seems to be well established by the analyses thus far made that traces of lead and tin are commonly to be found in tomatoes and other canned goods preserved in tin cans.

Canned condensed milk has often been made the subject of complaints to this department. The analyses and investigations have failed to reveal anything worse than partial skimming. (See special report dated August 15, 1885). Several complaints have been made, based upon the appearance of the milk on opening the can at the top end, or at the end where the cap was sealed. In such cases the slight scorching of the milk by the heat applied in sealing the can has usually been the cause of the complaint. I have never found starch, gelatine, or other foreign matter excepting cane sugar.

GELATINE IN FOODS.

The use of gelatine in ice cream, charlotte russe, and other foods is becoming almost universal. It is employed in cases where eggs were formerly used.

The nutritive value of pure gelatine has been shown to be very low in the scale of foods. The beef gelatine of the markets that is used by bakers is far from being pure gelatine. It frequently has a very disagreeable fetid odor, and has evidently begun to decompose during the process of manufacture.

After thorough drying, putrefaction does not take place as long as it remains dry. Suppose, however, that a gelatine which has thus begun to decompose during the drying process, containing perhaps the putrefactive germs in the dried state, be dissolved in water, and kept in this condition for a few hours in hot weather previous to being used, the result would be rapid putrefaction. This putrefaction would be checked by the freezing into ice cream, but the bacteria causing it are not killed by the low temperature. As soon as the cream is melted or eaten they resume their activity in the body, and may cause sickness.

Several cases of sickness have recently come under my personal observation, apparently from such a cause.

The cream in this case was obtained from one of the largest dealers in the city, in the usual tin basins packed in ice. On cutting these so called "bricks," the center of the masses was found to be liquid, while the outside was frozen. There was no possible explanation for this condition than that the cream had been allowed to melt and had been partially refrozen in the tin basins. On inquiry at the store where it was manufactured, the following day, I was informed that the cream was never frozen in the basins, but in a freezer. I was also informed that about five ounces of dried gelatine, an ordinary large tumbler full, was added to the forty quarts of ice cream, or, as cream expands to nearly double its volume during the freezing process, to twenty-five quarts of milk or cream, as the case may be.

The cream in question had a somewhat flat taste, and caused in those who ate it unpleasant eructations of gas, then nausea, vomiting and diarrhœa.

All who ate the cream were more or less affected. One adult was sick for two days, while others were able to attend to business the next day. The symptoms in these cases were not severe, except in the one case, but were enough to fix the cause upon the cream. Owing to the unpalatable taste of the cream little was eaten by any member of the family, and this may account for the mild nature of the sickness. An analysis of the cream, in this case, revealed the presence of the gelatine.

In another case of ice cream poisoning investigated, where a larger number of persons were attacked, a similar fetid, disagreeable odor was observed during the analysis. At the time, the practice of using gelatine in ice cream was unknown to me, and no test was made for it. Some weeks after the occurrence, while seeking information on the subject, I was informed by a wholesale dealer in gelatine in New York City that he had sold gelatine to the manufacturer of the above mentioned poisonous ice cream. The evidence, while *not conclusive*, is very strong that gelatine was used in the manufacture of that cream, and the putrid odor, as well as the sickness, due to it.

It is a well known fact that gelatine is an excellent medium in which to cultivate various kinds of micro-organisms, and if the conclusions here mentioned be correct, it seems that gelatine should be used with great care in connection with food preparation. When used carelessly it may do a great deal of harm, as the above cases show. I wish to impress those who use it with the importance of guarding against its dangers. Gelatine should not be allowed to remain in solution for many hours before using, especially in hot weather. As gelatine is not an essential food, and as in the experiments of the French Gelatine Commission, it was found that soup or jelly made from bones would not support the life of dogs, although the raw bones would, the propriety of adding it to foods may be called in question. When used at all, only the best varieties should be allowed, and such as are free from a putrefactive odor. Gelatine is added to oleomargarine by some manufacturers for the purpose of making it hold more water.

It is claimed that by its use this compound may be made to hold as much as twenty per cent. of its weight of water. Such a mixture does not keep well, and it has been known to spoil in hot weather by a putrefactive change of the gelatine. I should certainly strongly object to this use of gelatine.

DETECTION OF GELATINE.

The detection of gelatine in butter, milk, cream, &c., is by no means an easy task. The books say very little or nothing upon the subject. We have conducted a considerable number of experiments to perfect a simple method of detecting gelatine in the presence of other soluble proteids. Two methods have been tried. To separate gelatine from butter take a suitable quantity of the butter and shake up with ether. Pour off the ether-fat solution and shake with a fresh portion of ether, and so on until the fat is all washed out. The residue may now be boiled with water, containing a little acetic acid. The gelatine will pass into solution with a little of the casein and the salt. Or, the residue left after removing the fat may be boiled with water, made alkaline with caustic soda or potash. To the hot solution add a small quantity of pure sodium sulphate, and conduct a stream of carbonic dioxide through it. This precipitates the other nitrogenous matters, while the gelatine (or the glutin present) is left in the solution. Filter—A solution of tannic acid is now added to the filtrate when, if gelatine be present, a white floculent precipitate is produced. A few experiments with the method seem to indicate that it is reliable. To estimate the glutin in gelatine, or in foods to which gelatine has been added, we may proceed, as above, to separate the other albuminoid substances and then add a measured quantity of a standard solution of tannic acid. We must know the exact amount of glutin which a cubic centimetre of the tannic acid will precipitate. The excess of tannic acid is estimated by titrating with a standard solution of potassium permanganate, using a solution of indigo carmine as an indicator.

The results obtained by Dr. Grothe in a number of experiments seem to give a favorable opinion of the process as a quantitative method.

The second method of separating glutin from albuminoid substances, and one which seems quite successful, is as follows: After separating the fat, if present, by the use of ether, and boiling the residue to effect a solution, acidify the cold solution with acetic acid, add a small quantity of a freshly prepared solution of potassium ferrocyanide, and filter. The albuminoids are precipitated in the cold, while the gelatine is not. A little tannic acid or tincture of galls may now be used with which to test the filtrate.

SODA WATER APPARATUS.

The condition of soda waters has received a certain amount of attention in continuation of the work begun last year.

One hundred and fifty-eight inspections were made, with almost negative results. Very small traces of copper were found in a few cases, but in general there was found a great improvement over the condition of the fountains last year. In 55 inspections made by me in the summer of 1884, no less than 17, or in nearly one-third of the stores visited, the waters were found to contain copper in larger or smaller amounts. We must conclude, therefore, that the druggists and others dispensing soda waters are much more careful in the care of the fountains than formerly. But one druggist was found using tin washed storage fountains, which were discarded by him without the necessity of prosecution.

LAGER BEER.

An investigation into the effect of brass faucets upon these beverages drawn through them was begun in connection with the investigation of soda water apparatus in 1884. The matter was taken up during the present year, and the results have been brought to your notice by a special report dated September 1, 1885.

In order to ascertain whether a brass faucet becomes corroded by contact with lager beer I procured a second-hand faucet and had it sawn open so as to expose the inner surface. The condition of the faucet may be seen by reference to the specimen presented. I then procured eight samples of lager beer from eight different stores. Four of these were taken in the afternoon and four in the early morning, and the first drawn from the faucet after standing about six hours. The analysis of these last four showed small quantities of copper in three and zinc in all. The second series of four taken in the afternoon showed copper and zinc in all. It seems, therefore, that the faucets do impart the metals of which they are composed to the beer.

The faucets in common—almost universal—use are made of brass, and occasionally are plated with nickel. I have not met with one lined with tin or silver.

The quantity of these metals found was very small, being in one or two cases little more than a trace in a half pint, while in other samples considerably more. If beer drinkers were in the habit of drinking but one or two glasses a day the above quantities would hardly be worthy of mention, but when the customary daily quantity becomes thirty or forty, or even more, this small quantity becomes a matter of importance, and may prove to be injurious. As it is an unnecessary addition to the beverage, and may be injurious, it would be advisable to change the faucets so as to prevent contamination.

Another foreign matter which nearly all native beer contains seems to me to call for strong condemnation. I refer to the practice of the brewers of putting bicarbonate of soda in the kegs so as to make the beer foam when drawn. In other words, to give it a bead.

The quantity to be added to each keg, two ounces, is compressed into a cartridge and dropped in at the time of filling and immediately shut up. The result of this practice is to develop a considerable quantity of carbonic acid and charge the beer artificially instead of allowing it to remain on hand long enough to do so naturally. Another object of the bicarbonate of soda is to neutralize the acid which is likely to be formed by the souring of these new and improperly clarified beers. Many of the beers made in Brooklyn are sent out from the brewery in about fourteen days after the brewing. Without entering too much into the chemistry of it, it may suffice to say that there are certain products of the fermentation (dextrine, &c.) which are left unfermented and which require time. These half cured beers with more or less yeast still in them, clarified by artificial means and charged with bicarbonate of soda, are the ones mostly sold over the counters in this city. The alleged causes which induce brewers to sell their beer in this state seem to be sharp competition and the lack of necessary capital, and storage to hold the beer for a proper length of time.

The margin being small, it becomes necessary to sell large quantities, and this requires a large working capacity and large storage cellars, kept at a low temperature by ice or expensive ice machinery, and the storage of the beer for several weeks, all entail expense which the small profits will not allow. There is no difference of opinion, as far as could be determined, among intelligent dealers in this beverage that the beer above described is not a wholesome drink, and every habitual beer-drinker knows that certain kinds disagree with him, while he can drink others with apparent impunity. To return to the soda cartridges, calculation shows that thirty glasses of the beer will contain between 180 and 200 grains of bicarbonate of soda. This is not an exceptionally large number of glasses for a man to drink. I have no hesitancy in saying that, if my information and figures are correct, and I believe they are, the practice of adding this large quantity of bicarbonate of soda is detrimental to the health of beer drinkers. Moreover, I am informed that in some cases the cartridges are made of a mixture of tartaric acid or cream of tartar and bicarbonate of soda.

Such beers are quite laxative, and are perhaps less injurious than those in which the soda alone is used. This practice is forbidden by law in Germany and Austria.

Later analyses have shown that the common ale pumps are more objectionable than the brass faucets. The barrel of the common ale pump is made of copper or brass. It is about eleven inches high, and has an internal diameter of about two and one-quarter inches. The piston is mounted on a brass piston-rod, and the pipes leading from the barrel in the cellar to the pump behind the counter, a distance of from eight to fifteen feet, is sometimes made of tin, tin-lined lead, or lead. Very few of those examined have tin pipes. The pipe will hold about two or three glasses, when full, and this quantity is exposed to a leaden surface, in some cases, for hours together, and, as proven by analysis, a considerable quantity of lead is dissolved by it.

The inside of the barrel of the pump is subjected to the friction of the piston-head, which is constantly scouring off some of the metal and presenting a fresh surface to the action of the fluid.

Moreover, after standing unused for some time, when corrosion has taken place, there is no means of cleaning the barrel of the pump. The salts of copper are of necessity washed into the beverage when the pump is brought into use again. In every respect the ordinary ale pump is very objectionable. The investigations were carried into the question of the adulterations of beer. The breweries were visited at hours when we were not expected, and everything was examined from top to bottom with a view to discover what substances were used.

The principal object of this was to ascertain the truth or falsity of statements frequently made concerning the adulterations of beer.

The most objectionable features discovered in these investigations were those connected with the lack of cleanliness, the attempt to turn out the product unfinished and not properly clarified, and the various additions for the purpose of correcting the effects of the above faults.

From a sanitary point of view the most important adulterations discovered were yeast and sodium bicarbonate.

The control of lager beer in Bavaria and other German states is undertaken by the governments. From what we can learn of our native lager beer I am of the opinion that its manufacture here should be under surveillance by health authorities to prevent deceptions and adulterations.

From a recent report of the Hygienic Institute of Munich we learn that turbidity from yeast is considered sufficient cause for condemning the beer. The addition of tartaric acid and bicarbonate is declared in the report to be cause for condemnation.

Several samples of beer were rejected, also, for being insufficiently fermented. In relation to whether yeast is to be regarded as dangerous or detrimental to health, the report says: "The former and more recent experiments upon this subject made by Prof. von Pettenkofer, have shown that relatively small quantities of beer, turbid with yeast, can produce catarrh of the stomach and bowels, which, under certain circumstances, may attain a very violent character."

These authorities, therefore, consider the sale of such turbid beer as a misdemeanor. The report advocates counting the yeast cells in the beer by means of the microscope, according to Kock's method.*

The following paper, read by Otto Grothe, Ph.D., one of the chemists of this Department, at the October meeting of the American Society of Public Analysts, is here reproduced, as it gives the results of our investigations into the subject.

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* Repertorium des Analytischen Chemie. Nov. 1885 (No. 21), p. 359. (Abstract.)

COPY OF A REPORT ON BEER, BY OTTO GROTHE, Ph.D.

"The Health Department of the City of Brooklyn has for some time carried on investigations with reference to the brewing of lager beer as practiced in that city. The peculiar cathartic effect of some of the Brooklyn lager beers seemed to indicate the presence of some substitutes, principally for hops. The analysis of such suspicious beer failed, however, to reveal anything of importance, either on account of the absence of such substitutes, or because the quantities of beer used were too small. Before going to the expense of purchasing a keg or two from each brewery for the chemical laboratory, Dr. Bartley thought it to be the best to have the breweries, in the first place, inspected. These inspections resulted principally in the discovery of a variety of substances used by lager beer brewers as clearing and improving agent, the latter being considered the most objectionable. They were sodium bicarbonate, tartaric acid, cream of tartar, isinglass or gelatine, glucos, grape sugar, juniper berries and salicylic acid.

"Sodium bicarbonate is a substance most regularly used by the brewers, and it serves them for two purposes—namely, neutralization of the acid in the beer, and charging same with carbonic acid, in order to give to the beer a better bead.

"The opinion of the brewers about the necessity of this addition is very much divided; while some believe it to be utterly necssary, others say they would rather do without it, as it causes them a heavy expense. They all say, however, they cannot avoid it, because the public wants a perfectly neutral beverage. There is beer in the market which has no addition of bicarbonate. viz.: 'Niagara Falls,' 'Milwaukee,' 'Clausen's Bohemian Beer,' 'Piels'' beer, of Brooklyn. These are recognized as the best kinds of beer, while the beer for bottling purposes is also generally free from that addition. The quantity of the soda added
ich, and we may say in proportion to the quantity
ed in the beer. This quantity of acid in the beer
the knowledge and the attention of the brewer.

Thus we find that breweries which have clean, well ventilated and flushed cellars, in which refrigerating machines are in use, and which are conducted in a scientific way by an expert foreman, can afford to sell their product with less than one-third of the quantity of sodic bicarbonate used by smaller concerns which are not so well conducted, and which have not the facilities of their larger competitors.

"The largest quantity of bicarbonate used is about two and a half ounces to the keg or quarter of a barrel. The size of a barrel varies from thirty-one and a half to thirty-three gallons, according to the age, the older kegs becoming smaller by the contraction of the wood. A keg, therefore, contains eight gallons of beer, or sixty-four pints, which is considered equal to about a hundred glasses as sold in the beer saloons over the counter. A glass of beer, therefore, contains in some cases three-fourths of a gram of bicarbonate of soda ; and as a moderate beer drinker will under certain circumstances, for instance, in hot weather, drink about twenty glasses of beer a day, he takes about fifteen grams or 225 grains of bicarbonate of soda with it. A heavy beer drinker—say a laborer who works outdoors and who buys the beer by the pint—may consume as many as forty glasses a day, and he takes an ounce of bicarbonate of soda with it. The smallest quantity of bicarbonate of soda used in our breweries is one ounce to a half of a barrel, and the difference in the effects of that addition is a very remarkable one, the beer tasting slightly acid.

"Sodium bicarbonate being a prominent feature of all the American lager beer sold by the glass over the counter, and the difference in the quantity used being such a great one, we will consider for a moment what the reasons are for this addition of soda. To do this with the best possible effect it is desirable to find out the methods followed in the manufacture of beer. We find that the one raw material, the malt, is always prepared outside of the brewery, and the brewer buys it ready for grinding. This operation represents the first stage of the process of manufacturing beer. The malt when ground falls automatically into the mash tub, a large wooden tub provided with a double bottom and a strong stirring apparatus. The water necessary for the brew has been heated directly or indirectly by steam to the temperature best fitted to convert the starch into maltose by means of the diastase. The water is kept in a wooden or iron tank, provided with a covering of unconducting material all around. The temperature applied is from 50 to 60° Reaumur, and the water is gradually added while the malt flour is running from the mill into the mash tub. At the same time the stirrer is started and the mass is kept well mixed. After two or three hours the stopcocks, which close the pipes connected with the double bottom of the mash tub, are opened, and after the first unclean fluid has been drawn and kept separately, the clear wort is allowed to flow into the boiling vat, a large copper vessel provided with proper draught or ventilating pipe. The wort is heated in this vat to a strong boiling point by a system of copper steam coils, and then the hops are added. The boiling is continued for about two hours and the steam valves are then closed. Then the wort from the mashing tubs filters through the grain and is all collected in the boiling vat, the grain being at last washed by a rain of water of 70° Reaumur, dripping from a 'spatcher' into the mash tub.

"The mash tub is then immediately emptied by shoveling the grain through a large pipe connected with the bottom of the mash tub, which, of course, is ordinarily kept closed, and the last residues are cleared away by a strong water splash. The grain generally falls into a large storage box in the yard, from whence it is taken away by the owners of cow stables. The wort and hops residue contained in the boiling vat are then emptied by opening the hopjack, which leads the liquor into the emptying vats, "Ausschlagbuetten," where it is allowed to settle for some time. The next thing to be done consists in the pumping up to the upper floor of the brewery either into e wooden or iron cooling pan or into collecting tubs. Inligent brewers have done away with the cooling pan altoher, and prefer to cool the wort by water, and with the aid of the refrigerating machines in properly constructed beer coolers. Whatever facilities may be provided, the wort is then cooled down to the fermenting temperature, namely, as low as possible, without reaching the freezing point. The breweries in which refrigerating machines are being used have a great advantage over their competitors. The refrigerating machines allow the liquid to be cooled down to the freezing point, while the breweries working with ice cannot very well use anything else for their last cooling than the ice water collected in their cellars, which they pump through the cooler. These coolers are communicating copper pipes, arranged one above the other, copper sheets ending in fringes being attached to the lower side of these pipes. The wort runs over the outside of these pipes, being distributed over them by a trough with holes in the bottom, arranged on the top of the cooling apparatus, and by the aforesaid fringed copper sheets. The cooled wort is then conducted from a collecting trough into the fermenting vats, which are open wooden tubs, properly arranged in the fermenting rooms. The so-called cellars in the lager beer breweries in New York and Brooklyn are properly constructed buildings, provided with the necessary tubs, 'Geschirr.' Such cellars are generally divided into three different sections, the fermenting rooms, the resting rooms and the storing rooms. The fermenting rooms, containing the fermenting vats, 'Gachrbuetten,' described before, which are generally of a capacity of not more than 100 barrels each and which on an average only hold sixty barrels each. The temperature of these rooms should be the lowest attainable in the brewery, and intelligent foremen keep the temperature down to from 0° to ½° Reaumur. The next section is formed by the resting rooms which contain the resting tubs, 'Ruhbuetten,' large wooden tubs closed on both ends, and standing upright. They are the largest tubs used in the breweries, ranging all the way from 100 to 800 barrels each. They are a special American invention, having been introduced on account of the increasing demand, and the necessity of producing more beer in a given time than the capacity of the brewery was calculated for. The temperature in these sections should be from 1° to 1½° Reaumur. The third section is the storing place, namely, the rooms containing the storing barrels, "Lagerfæsser" or "Spaehuefaesser." These barrels are ordinary shaped large barrels, generally not exceeding 100 barrels in capacity, and partly filled with shavings, especially prepared for this purpose, of a wood not containing tannin nor resin. The temperature of these parts of the cellar is best kept down at from 2° to 3° Reaumur.

"The arrangement of a lager beer cellar in America differs greatly from that in Germany, and the same is to be said of the treatment of the wort in the American cellars from the method of brewing beer in the old country, and the advantage is generally not to be found on the side of the American breweries. The treatment in the fermenting rooms is nearly alike, the only difference consistng in the time during which the beer is kept in the fermenting vats. As a rule the beer is kept longer in these vats in this country than it is in Germany. The beer in some good breweries is turned out in summer time six weeks after the brewing, and is at this time of the year in about eighty-six days after its manufacture. At the different breweries the beer cannot be kept an equally long time in the fermenting room, and this depends to a great extent upon the presence of a good refrigerating machine, which enables the operator to keep the beer in the several rooms at any temperature from below the freezing point up to 3° Reaumur. In breweries which have to rely on natural ice the fermenting rooms are kept as cool as possible, but naturally they are always warmer than the rest of the cellar. For the cooling of the fermenting room, a comparatively small section of the entire cellar, a larger quantity of ice, or coal, in case of the using of refrigerating machines, is required than for keeping the other parts of the cellar at the right temperature, and for cooling the worts by the refrigerating machines more coal is required than for cooling the entire cellar. The refrigerating machines used in New York and Brooklyn are ammonia, ammonia oil and nia brine machines. They are worked with anhydrous, or anhydrous ammonia, and expand this ammonia in cooling elements in the cellar or in a separate expansion room. In the latter case the cold generated is taken up by brine, which circulates from the expansor to the spot where the cooling is to be effected. The last stage in the process of brewing in this country, before the beer is filled in kegs, is the treatment of the same in the storing or shaving vats. These vats, which contain wooden shavings, as stated above, are entirely different from all other receptacles used in brewing. They are made strong enough to resist a certain pressure, and they are generally kept under some pressure. At first the beer is kept in these vats at rest, loosely bunged. Later on a quantity of the beer from the fermenting vats, which is in the strongest state of fermentation, is added, and the vat solidly bunged. After a while a solution of isinglass, made by cream of tartar and water, is added and the bung replaced. Then the beer remains in the vats until it is perfectly clear. The time which the beer is kept in these vats varies very much. In good breweries the beer is kept that way from eighteen days to two months. The shorter the time during which the beer remains in the storing barrels, the greater the quantity of the isinglass solution to be added will have to be. The cream of tartar is only used to effect the solution of the isinglass, and the better the quality of isinglass the smaller the quantity of cream of tartar to be used. The smallest quantity, perhaps, used in any of the breweries in New York is one-quarter of a pound for one gallon of this solution, which is considered sufficient for twenty-five barrels of beer; but this quantity of cream of tartar is hardly sufficient to dissolve the isinglass, of which often small pieces can afterwards be found in the beer.

"From the vats the beer is filled into the kegs in which it is sold, and a quantity of bicarbonate of soda in proportion to the size of the kegs is added. The quantity of malt and hops used for the manufacture of beer are not always alike. One brewery in New York, which possesses two boiling vats of the size of 365 barrels and a capacity of 275 barrels, uses 400 bushels of malt and 425 pounds of hops for each filling, and the expenses of one brewing process for material, coal and labor excluded, amounts to about $400. The principal thing for a man to do who wants to sell good beer and suffer as little loss as possible, consists in keeping his brewery and cellars clean. In some instances this is being neglected, and it is only natural in places of that kind to see mucor and fungi grow on the walls of the cellar and even in the storing, resting and fermenting tubs. The use of cooling pans often assists in the creation of bacteria in the beer and in the wort. The lactic acid ferment can very seldom be entirely excluded, and the higher the temperature of the fermentation, the more acid the beer will contain. Besides, bacteria and bacilli, if not carefully excluded, may play sad havoc in a cellar and impart a taste to the beer, which is too much even for the greatest beer drinker.

Another matter which eventually may destroy the whole stock of a brewery, is the degeneration of the yeast into what is known as *Sacharomyces apiculatus*, which creates a flavor in the beer liked by nobody. The growing of these vegetations can only be prevented by continuous attention, scrupulous cleanliness and occasional investigation with the microscope. Of course, to do this in the right manner the foreman of the brewery must be well educated; but not all the breweries have thoroughly educated foremen, and in such cases it often becomes necessary to call in a 'beer doctor,' whose business it is to fix up the spoiled liquid so as to render it marketable again. Whether he is able to make the beer wholesome again is at least doubtful. He has to use certain ingredients to destroy some substances contained in the beer, and will naturally pay very little attention to the effect of his mixture on the health of the beer drinker. Glucose and corn flour are also used by nearly every brewer, the latter substance generally freed from the fat.

"Some lager beer has a decidedly bad effect on the health of the drinker, which is without any doubt caused by the improper treatment of the beer. Sometimes the malt becomes wet and therefore is spoiled before it reaches the brewery, but an unscrupulous brewer will nevertheless use it. Certain beer taken from Brooklyn breweries contained bacteria and lactic acid ferment in large quantities. In another brewery the cellars were found full of mucor, and a bad odor penetrated all the rooms. To neutralize any bad effects the filler added large quantities of bicarbonate of soda to the beer by means of a tablespoon and his hand, putting at least three ounces of it in the small kegs. In all breweries copper coolers, brass faucets and brass fittings are in use, which are only kept thoroughly clean when an energetic and capable superintendent is at the head of the establishment. An unclean brewery could never succeed in selling its beer without adding large quantities of bicarbonate of soda, and if no other signs can be perceived the presence of vinegar flies will prove the necessity of it. Very often the necessary time is not given for the satisfactory fermentation and storage of the beer, which should in some way be regulated and controlled by the authorities.

" There cannot be any doubt that large quantities of bicarbonate of soda regularly introduced into the stomach are detrimental to the health. Inasmuch as the lager beer is used as a food by many people, it would be greatly appreciated by intelligent beer brewers and beer drinkers if the use of bicarbonate of soda could be regulated by the authorities, or, if possible, entirely abolished. By such regulations the unclean brewer would be compelled to either keep his brewery clean, or go out of the business altogether. Such regulations should also be extended to the quality of the metals of the apparatus used in the different brewing processes, so that to the American lager beer the same name can be given as to the German beer, which Justus von Liebig called 'liquid bread.'"

In addition to the above I offer the following facts which, since the reading of the paper, have come to my knowledge. Two prominent druggists of New York assured me they were selling glycerine and licorice periodically to some lager beer brewers, and they knew these substances were used sometimes for the purpose of repairing damaged stock. I was unable to ascertain in what quantities these alleged drugs are used. There cannot be any doubt, however, that they are in constant use. Among others, I received from a Brooklyn brewer a circular of a dealer in brewers' supplies, who recommends a variety of different flavoring substances for lager beer. The addition of a wine glass full of these substances to a keg, will produce, according to the assurance given by the dealer, the flavor and taste of different brands of imported beer, as for instance, Libotschauer, Erlanger, Pilsener, &c. I am trying to procure these flavoring extracts, which I decidedly do not consider proper additions to beer. I might remark, that about four years ago I analyzed a well known New York beer, and discovered the presence of ethylbutylate in it. With regard to the abbreviation of the time necessary for brewing a beer the following fact is of great importance. The malt used by the American beer brewers has generally grown in abundance of water, which is said to shorten the time of manufacture and give a large product. This malt, however, has one great disadvantage. The fermentation of the wort, which, for instance, in European breweries is interrupted before the finish in storing barrels, cannot be carried on in the same way. For certain reasons a beer treated in this way in American breweries will not become clear, and even clearing substances containing gluten will prove ineffective in very many instances. The practice in our breweries is, therefore, to finish the fermentation in the fermenting tubs, and afterwards to add a certain quantity of strong fermenting wort (the Kräusen.) This makes a larger or smaller addition of gluten necessary for rendering the beer clear, and this is called "the fining." But sometimes even then a good result is not attained, and the beer will not become clear. What is the reason for this occurrence?

Hops contain a certain quantity of tannic acid, which, by boiling with the wort, partially precipitates the albuminous substances present. If, however, too large a quantity of these albuminous substances should be present, and this is mostly the case in the wort prepared from American malt, all tannic acid is removed already during the mashing process, and as the fermentation does not remove the excess of albuminous matter, the beer remains turbid, notwithstanding the addition of gluten. This gluten can apparently only serve as a clearing agent if tannin is present in the beer, and it then acts by forming a precipitate with the same, which, in settling on the shavings, brings down the yeast. The disadvantage could apparently be avoided by adding a large quantity of hops to the wort; but for one reason this cannot be done, i. e., the taste of the prepared product.

The American hops impart a somewhat rigid taste to the beer if applied in larger proportions than mentioned before. If, therefore, a beer brewer does not want to use imported hops, which, at any rate, are more expensive than the domestic, the remedy suggested before cannot be applied. It is therefore a practice in certain American breweries to add tannin prepared from nut galls, &c., to the wort. Is this practice commendable?

I do not think so, as it implied the repair of a faulty previous operation. Whether this faulty operation be made by the brewer or the malster is insignificant. Under the present condition of competition and partially uncontrolled manufacture, considered in the interest of health, this practice seems to be utterly unavoidable, as also another circumstance will show. If the wort, to be fermented, contains an excess of albumin, the yeast finds too much nitrogenous matter for retaining its healthy character and becomes over-rich. Such yeast does not make as good beer as a normal, low fermenting yeast should. The flavor of the product becomes disagreeable, and undoubtedly the product is not as healthful. The practice of adding tannin is very often abused by unscrupulous brewers for shortening the period of the brewing process, and in this case the addition of tannin is decidedly to be rejected. The fermentation, if continued at a somewhat higher temperature, may be considerably shortened. By fermenting at 4° to 7° C, this operation is finished within seven to nine days. As the beer need not stay any longer than about three days in the resting tubs, it can then be finished in the shaving barrels, and it is a well-known fact that addition of fermenting wort, brewing and fining, providing an excess of tannin is present, can be done in five days. Consequently, by adding enough tannin, beer can be made in sixteen days. Such beer needs comparatively much gluten, and as the solution of this substance (gelatin and isinglass, &c.) is generally effected by cream of tartar, the product is very acid, and requires consequently much sodium bicarbonate to become drinkable. With regard to the metal vats used in breweries, I have been informed by a competent Brooklyn brewer, that in European breweries all pipes, coolers, &c., except the brewing pan, as far as they consist of copper or brass, and come in contact with the hot wort, must be tin lined. To American brewers tin lining is generally considered superfluous. I believe it would be very good to adopt tin lining in general, so as to get rid of the copper salt, sometimes present in very strong indications. The same has to be said about zinc and lead, which latter metal is generally present in the ale and porter drawn from pumps fitted up with lead pipes in the lager beer and ale saloons.

WATER ANALYSIS.

A considerable number of analyses of water have been made during the year, as the accompanying report, written by Walter H. Kent, Ph. D., who made most of these analyses, will show. The report includes a weekly analysis of Ridgewood water, drawn from the pipes at the laboratory, each Monday. It is believed that this table will be valuable for reference in regard to the variations in the city's water supply. The second table includes the analysis of various waters, other than Ridgewood, examined during the year.

In addition to the chemical examination of these waters a partial microscopical examination has been made. We have not attempted to apply the "filming process" with gelatin or any other culture methods, and for this reason I say a *partial* microscopical examination has been made. The result of such examination has not led to any unusual or valuable results.

The organisms found were such as are usually found in ponds or streams in this climate, and of no known sanitary significance. One important examination of a water has been made during the year, the results of which are not expressed in the annexed report of Dr. Kent.

The investigation was made the subject of a special report, dated June 9, 1885. The case is one admirably illustrating the effects of carelessness in regard to certain well known facts. It also illustrates the danger of the presence of even small quantities of lead in the article of every day consumption, and of the truth of some statements made in this report upon the general subject of metallic adulterations. The case referred to was the poisoning of the crew of the Norwegian bark "Donna Zogla" by the paint used to paint the inside of the water tank, nearly a year before. The case is one of unusual interest, because of the long time after the painting that the symptoms of poisoning appear, and because no lead existed in solution in the water. The lead existed in the sediment as sulphate. It has been claimed that lead sulphate is not poisonous because of its insolubility.

This occurrence demonstrates that it is decidedly poisonous when taken every day for a considerable time.

I inclose a copy of a letter from Dr. Belcher, House Surgeon of the L. I. College Hospital, as it gives the history of the men after entering the hospital.

In concluding my report I wish to say that while I have indicated the chief subjects investigated and the main lines of work, it must be evident to any one who knows the character of the ivestigations committed to us, that what is here given represents only the *results*. The literature of many of the subjects with which my special reports have to deal is extremely meagre. It frequently happens that original experiments extending over days or weeks must be carried on before one sentence of such a report can be written. Facts are not always easy to secure in new fields. A great deal of this work is comparatively new in this country, and judges, juries, and the public in general, are to be educated upon the importance of the work and the reality of the dangers pointed out. A great deal of patience and of quiet work in the laboratory and library are often necessary to place the facts upon a substantial basis to be used as evidence in the courts. New adulterations are frequently discovered which require new methods for their detection and estimation. It may require a number of days or weeks for the chemist to perfect a method of analysis applicable to the case in hand.

This work does not appear in the report of the analysis made, until perhaps another series of analyses of the same kind is to be made. Again, it may sometimes seem that an unnecessary amount of routine work is performed; for example, at the beginning of the year almost two whole months were consumed in making analyses of preserved fruits, nearly every can of which was condemned by that analysis. No can was condemned on the strength of the analysis of other cans of the same lot, which would have been in my opinion a perfectly justifiable thing to do, after a few analyses had proven that these goods were necessarily dangerous from the manner in which they were put up.

Another example of the seemingly unnecessary work done was in the examination of candies.

Every sample condemned was first submitted to analysis. In many cases the candies were found in retail stores in small quantities, and bought by them about the same time from the same manufacturer. For the sake of perfect protection to the retail store it was necessary in several instances to make a tedious analysis in order to condemn a half pound of candy. It has been a great hindrance to the progress of the work to be compelled to buy samples of every suspicious article and make a chemical analysis before any action against the vender or the article itself could be taken. It seems very desirable that power e vested in the Inspector of Foods to seize upon any deleterious rticle of food or clothing, when he has a *reasonable suspicion* that it is such, and that he may order the article thus suspected to be removed and kept from sight, in the store, pending an examination. That it be made a misdemeanor to remove any article from the store after orders have been given to retain it.

Such cases have arisen during the present year. With all these restrictions and difficulties thrown about the work in general food inspection, it must necessarily make very slow and unsatisfactory progress in attempting to control the food supply of so large a city.

The same difficulties, to a less extent, were met with in milk inspection when I first undertook that work. Gradually, however, the courts, the police, the public press and even the milkmen themselves, have come to regard the inspection of the milk and of the cows as a necessity, and submit cheerfully to it, and even assist in the work.

Respectfully submitted,

E. H. BARTLEY, M. D.,

Chief Chemist.

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REPORT ON RIDGEWOOD WATER

BY WALTER H. KENT, Ph.D.

As the results of an analysis not infrequently vary with the methods by which they are obtained, we think to briefly give the various processes here used will add somewhat to the value of the work indicated in the tables below. In most cases we find it possible to make the description of the process clear by reference to well known works on analysis. With the exception of the Hardness, the analytical results are expressed in parts per one hundred thousand. For a statement of the general sanitary bearing and interpretation of the results of a chemical analysis of waters, we refer to Dr. E. H. Bartley's Report as published in the Report of the Commissioner of Health of Brooklyn for 1884.

TOTAL SOLIDS AND LOSS ON IGNITION.

250 c. c. of water, the amount generally taken, is evaporated to dryness in a platinum dish on a water bath, and then dried in a drying closet at 100° C. to a constant weight. After weighing for *total solids* it is ignited at a dull red heat, and the *organic* and *volatile matters* determined by deducting the weighed residue from the total solids.

FREE AND ALBUMINOID AMMONIA.

Wauklyn's method of nesslerizing, as described by Dr. Bartley (Report of the Commissioner of Health of Brooklyn, 1885, page 31) is the one here used. The only deviation from the process described by him has consisted in the use of a retort with a neck so bent that about the first half of its length descended toward the bulb of the retort. By this means the distillation may be carried on much more rapidly and with certainty that the liquid contents of the retort are not carried over into the distillate. In determining the albuminoid ammonia we find this modification to be a decided advantage.

CHLORINE.

In determining the chlorine, 250 c.e is directly titrated with silver nitrate by the usual method, using potassium chromate as the indicator.

ORGANIC MATTER.

The method used is that given by Koenig (*Uahrungs-und Genusmittel,* Part II, page 672,) with the exception that sulphuric acid is used in the place of sodium hydrate. As sulphuric acid is quite as often used by other chemists as sodium hydrate, and as we found most sodium hydrate of the market to contain organic matter, the process has been changed in this respect.

We have adopted the ordinary plan of expressing the amount of organic matter by the amount of oxygen necessary for its oxidation, as determined by the amount of potassium permanganate used in the titration.

NITRATES AND NITRITES.

With reference to these salts, only qualitative tests have been made.

Nitrates.—One part of strong sulphuric acid (free from nitric acid) is mixed in a test tube with one part of the water to be tested, allowed to cool, and then a few drops of a solution of metadiphenylamine in sulphuric acid is added. If nitrates are present a blue color appears from the formation of aniline blue (triphenylrosaniline). (Schulz, *Chemie des Steinkohlentheers*, page 383.)

Nitrites.—To a large test tube nearly full of the water to be tested add a few drops of dilute sulphuric acid, and then a small portion of phenylendiamine chloride, either dry or in solution, and let stand for a few minutes. The presence of nitrates will be indicated by a brown color, due to the formation of triamidoazobenzal (phenylen brown, Bismark brown, Vesuvine). (Bolley, *Handbuch der technisch-chemischen Untersuchungen*, p. 99; Schulz, *Chemie des Steinkohlentheers*, p. 408; Laubenheimer, *Grundzüge der Organischen Chemie*, p. 677–714.)

HARDNESS.

The hardness is here given in degrees, and was determined as explained by Wauklyn in his book on Water Analysis.

RIDGEWOOD WATER.

At the beginning of this year a weekly analysis of Ridgewood water was undertaken. With one exception the samples were all taken from the tap in the laboratory of the Department of Health, after allowing the water to run for some time. The laboratory being situated on the upper floor of the building, the pressure was not always sufficient to bring the water to that height, and at one time it was necessary to go down to the second floor for the sample. The sample was at all times taken in thoroughly cleaned glass-stoppered bottles, and analyzed as soon afterward as other work would permit. The bottle was always shaken before taking the portion for the analysis, so that the analysis below given, in each case, includes the sediment of the water. For purposes of comparison, the average temperature, the rain fall and prevailing wind for the week are annexed

Date. 1885.	Total Solids.	Loss on Ignition.	Ammonia.		Chlorine.	Organic Matter.	Hardness.	Meteorology for Preceding Week.*		
			Free.	Albuminoid.				Prevailing Winds.	Rainfall or Equivalent of Snow in Water	Mean Temperature.
										Fahr.
Jan. 5..	7.14	2.88	.004	....	1.28	.1178	2.8	S.	.02 in	37.9
" 12..	6.44	1.70	.001	.008	1.72	.1426	2.7	W.	1.15..	39.1
" 19..	6.42	1.92	.002	.005	1.28	.1302	2.6	W.	1.91..	38.65
" 26..	6.00	2.44	.001	.006	1.48	.1011	2.6	W.	0.50..	24.55
Feb. 2..	6.76	2.48	.002	.008	1.00	.0744	2.5	W.	0.10..	25.31
" 9..	6.80	2.48	.001	.005	1.60	.0668	2.5	W.	0.52..	24.76
" 16..	9.04	2.88	.002	.006	0.84	.2683	2.5	N E.	1.89 .	23.57
" 23..	8.20	2.32	.005	.007	1.00	.1781	2.4	W.	2.38..	21.59
Mar. 2..	7.08	2.12	.002	.005	1.08	.1498	2.4	W.	0.65..	27.64
" 9	6.44	2.04	.004	.007	0.80	.2028	2.4	W.	0.12..	36.38
" 16..	6.92	2.08	.003	.004	1.68	.1024	2.4	N W	....	26.52
" 23..	7.76	2.00	.001	.008	1.32	.1344	2.5	W.	0.30..	21.55
" 30	8.92	2.40	.002	.006	0.96	.0800	2.5	N W	....	31.57
April 6..	6.80	1.80	.001	.005	0.92	.1728	2.5	N E.	1.62..	43.26
" 13	8.40	2.68	.002	.005	0.96	.1250	2.5	S E.	0.16.	42.38
" 20 .	8.80	2.84	003	.007	1.16	.0960	2.4	W.	....	43.57
" 27 .	8.04	3.20	.003	.013	0.98	.1056	2.7	S.	....	61.88
May 4..	8.15	3.00	.006	.009	1.08	.1242	2.6	W.	0.80..	51.93
" 11..	8.22	2.41	.004	010	1.21	.1584	2.4	N E	0.77..	50.88
" 18..	6.95	2.00	.003	.006	1.52	.0846	2.3	W.	0.03..	56.79
" 25..	8.20	3.40	.002	.006	1.68	.0879	2.4	S.	0.28..	62.81
June 1..	8.25	3.10	.003	.007	1.84	.0875	2.5	E.	0.45..	64.36
" 8..	6.72	2.16	.001	.007	1.84	.1088	2.2	S.	0.32..	67.40
" 15..	6.35	2.10	.003	.008	1.72	0846	2.0	S.	0.64..	68.43
" 22..	7.00	2.28	.003	.008	1.92	.1077	2.3	S.	0.45..	74.86
" 29..	5.80	2.00	.002	.005	1.76	.0769	2.2	S.	....	71.69
July 6..	6.64	2.20	.001	.006	1.72	.1088	2.2	W.	0.24..	69.90
" 13..	6.00	2.00	.001	.006	1.88	.0923	2.3	S.	1.33..	77.31
" 20..	6.00	2.32	.001	.007	1.80	.0807	2.2	W.	1.25..	77.98
" 27..	6.50	2.40	.001	.006	2.08	.1269	2.2	S.	0.35..	82.21
Aug. 3..	6.80	2.60	.001	.007	1.80	.0846	2.5	S.	0.35..	77.29
" 17..	7.50	2.04	.001	.006	......	.1006	2.6	S.	0.37..	76.81
" 24..	7.40	2.95	.002	.005	1.72	.0769	3.0	S.	0.21..	75.21
" 31..	8.24	3.56	.001	.007	1.84	.0807	2.9	E.	0.79..	67.90
Sept. 7..	8.25	2.44	.001	.003	1.80	.0884	3.0	W.	0.46..	68.32
" 14..	8.40	3.32	.001	.005	1.72	.0923	3.2	S.	0.46..	65.19
" 21..	8.75	3.40	.001	.003	1.76	.1088	3.4	W.	0.04..	69.69
" 28..	8.20	2.84	.001	.003	1.76	.0692	3.5	W.	0.45..	60.21
Oct. 5..	8.65	3.05	.001	.005	1.68	.0999	3.4	S.	0.64..	66.36
" 12..	7.40	2.84	.002	.005	1.64	.0961	3.3	W.	0.71..	52.93
" 19..	7.40	3.00	.002	.004	1.76	.0923	3.3	W.	1.06..	57.21
" 26..	7.96	3.12	.002	.003	1.88	.1038	3.3	S.	0.79..	56.55
Nov. 2..	7.75	2.95	.002	.005	1.76	.1230	3.5	S.	1.01..	53.12
" 9..	7.60	2.50	.004	.006	1.92	.1596	3.2	S.	1.28..	52.38
" 16..	8.00	3.48	.003	.004	1.80	.1254	3.2	W.	.89..	52.93
" 23..	8.35	3.65	.002	.005	1.56	.1140	3.3	W.	....	43.86
" 30..	8.08	2.44	.001	.003	1.50	.0654	3.5	N.	1.51..	40.09
c. 7..	7.88	2.80	.001	.003	1.50	.0769	3.5	W.	.03..	38.41
" 14..	8.40	2.52	.001	.003	1.90	0961	3.6	W.	.60..	34.95
" 21..	8.50	2.60	.003	.006	1.50	.1040	3.5	W.	1.21..	39.39
" 28..	8.05	2.55	002	.005	1.35	.1120	3.6	N W	....	54.43

It will be noticed that the sample of water was taken each Monday, while
rology here given is for the week ending the previous Saturday. The
were taken at Prospect Park and reported to the Health Depart-
Culyer, Chief Engineer.

Qualitative tests for nitrites have in no case shown their presence. Nitrates are always present and generally in relative abundance. Professor A. R. Leeds in his former analysis of Ridgewood water found 1.2025 parts per 100,000.

Microscopic examinations of the water have been made from time to time. The sediment which at times become rather objectionable consists of inorganic matter, broken down vegetable matter and a variety of organisms. Diatoms are generally present, and occasionally are very numerous. Several times during the year complaints have been made to this Department of the turbidity of the water in a certain locality or a certain house. In most cases the cause of the turbidity has been the detachment and floating into a local pipe of large numbers of diatomaceous plants, algæ, &c. In some localities there are large masses of algæ or other growths to be found in the pipes, and from a rapid flow of water they easily become detached, and float with the current.

Miscellaneous Waters.

SOURCE OF WATER.	DATE.		EXPRESSED IN PARTS PER HUNDRED THOUSAND.						IN DEG.
	1885.		Total Solids.	Loss on Ignition	AMMONIA.		Chlorine	Organic Matters.	Hardness.
					Free.	Albuminoid.			
Well, Johnson street corner Pearl	April	11	79.28	....	None.	.003	7.5	.1344	16
Ridgewood water, 397 Thirteenth street	May	16	....	....	.005	.006	....	....	....
Public School, Tottenville, Staten Island	June	3	8.2	....	None.	002	0 8	.0096	....
.. ..	October	8	9.2	5.65	004	·.009	2.7	......	....
Carlton avenue corner Fulton (pump)	July	25	78 8	32.16	.004	.004	12.2	.118	21
East New York water supply	October	22	13.84	6.00	.002	.016	....	.296	....
Artesian well, 34 Clinton street	August	18	77.00*	....	.0025	.007	1.3	Tr.	....
Well corner Third avenue and Third street	June	19	....	....	.002	.001	3.7	.032	....

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* Solid residue.

$Ca\,CO_3$	22.58	$K\,Cl$	Trace.
$Mg\,NO_3$	22.32	$Si\,O_2$	3.13
$Mg\,SO_4$	7.99	$Fe\,CO_3$	95
$Na\,Cl$	17.16	$Al_2\,(SO_4)_3$	1.34

METHODS OF MILK ANALYSIS. COMPARATIVE TESTS.

WALTER H. KENT, Ph. D., AND OTTO GROTHE, Ph.D.

The appearance early in the year of a new method of milk analysis, known as the Adams* paper method, led to some comparative tests of this and the following ordinary methods of milk analysis heretofore in use.

WANKLYN'S METHOD.

This being an old method is already generally known, and a reference to Wanklyn's book on Milk Analysis is only necessary in this place.

CONTINUOUS EXTRACTION METHODS.

Many forms of extraction apparatus are in use, and some important improvements have been made in recent times; based on these nearly every chemist who has occasion to use an extractor has some variation more or less important which he can recommend. The Soxhlet principle of periodic immersion of the material in the hot extracting liquid is recognized by all as a great advantage. By its automatic working a thorough extraction is soon secured with a relatively small amount of the extracting liquid.

In milk analysis the solvent for extracting the fat is generally ether, though petroleum ether (rhigolene) is sometimes used. Some experiments made in this laboratory have shown that milk sugar is entirely insoluble in the latter agent, and if the precaution is taken to redistill the petroleum spirit this can undoubtedly be safely used.

As a medium on which to dry the milk previous to bringing it into the extractor for extracting the fat two materials are here considered, both of which admit the determination of total solids at the same time.

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*M. A. Adams, London Analyst, March, 1885, p. 46.

First—*The use of paper.* *A paper cartridge is made by rolling a strip of bibulous paper (English blotting or heavy filter paper) about two inches wide, and of a length varying with the thickness of the paper, into a cylindrical coil. In its loosely rolled condition it is fastened with a white cotton thread or a piece of wire. Then before use it is thoroughly freed from soluble fatty substances by extracting with ether and dried. About 5 grammes of milk is weighed in a small beaker. The weighed cylinder of paper is placed on one end in the milk and the milk thereby absorbed. It is then placed on a suitable support, resting on the dry end and dried in a drying closet at 100° C. After weighing for the total solids it is transferred to the extractor, when the fat is extracted in the ordinary manner.

Second—*The use of asbestos.*† A glass tube about 2½–3 in. long and ¾ in. diameter, nearly closed at one end (a portion of a test tube with perforated bottom) is two-thirds filled with ignited asbestos, a tuft of purified cotton being placed in the bottom to prevent loss of particles of asbestos. A tuft of cotton is also placed above the abestos, and the tube weighed. About 5 c. c. of milk is introduced into the asbestos with a small pipette, the cotton being removed for this purpose. The milk is then weighed and dried in a drying closet by drawing air through the tube. When dry, it is weighed for the total solids, and the fat then extracted.

SOXHLET'S AREOMETRIC METHOD.

For a working description of this process we refer to Koenig's, *Nahrungs-und Genussnuttel*, part II, p. 243. In brief it consists in making a measured amount of the milk quite strongly alkaline with potassium hydrate, and then shaking with a certain amount of ether which is saturated with water. The ether takes the fat into solution and rises to the top. It then remains to get the density of this ether solution of the fat from which the percentage of fat in the milk may be ascertained by reference to a table accurately constructed for the purpose. The density of the ether solution of fat is determined in an apparatus designed for this purpose, and, as described, with a hydrometer, though a Westphal balance may also be used. A number of precautions like that of temperature and manner of working need to be strictly observed. In the experiments referred to seven samples of milk were taken and the fat in each determined by the above four methods.

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*M. A. Adams, London Analyst, March, 1885, p. 46.

†Dr. S. M. Babcock, Second Annual Report, New York Agricultural Experiment Station, p. 168. 1883.

The specific gravity of the milk was in each case determined by the Westphal balance.

The results, as read before the American Society of Public Analysts and published in the London *Analyst* for June, are embodied in the following table :

MILK SAMPLE.		I.	II.	III.	IV.	V.	VI.	VII.
Specific Gravity		1.0364	1.0330	1.0343	1.0325	1.0300	1.0319	1.0319
Wauklyn's Method ..	Solids	13.33	12.94	13.87	12.45	11.78	12.57	12.90
	Fat...	.....	3 22	3.41	3.58	3.16	3.39	3.61
	Ash ..	0.733	0.726	0.760	0.767	0.615	0.717	0.736
Asbestos Method	Solids	13 15	12.79	13 53	13.10	11.48	12.56	12.98
	Fat ..	3.48	3.41	3.82	4.01	......	3.73	3.58
Soxhlet's Method......	Fat ..	3.52	3.68	3.98	4.18	3.40	3.82	3.83
Paper Method..........	Fat ..	......	......	4.43	4.67	3.46	4.07	4.16

Although the high results obtained by the Adams method may have been due, in part, to an improper preparation of the paper, we have not been favorably impressed with its advantages over other methods, partly from the fact that the preparation of the paper is in itself not easy, and partly because of the heterogenous composition of paper in general.

It will be seen that the fat determinations as obtained by the Asbestos and Soxhlets methods agree very closely with each other. These have therefore, gained our confidence, and the simplicity of Soxhlets method, requiring as it does, no weighing and a relatively small amount of time, has generally led to its use when an accurate determination of fat was desired.

As is known, the test required by the ordinances of the Department of Health (Section 45) is that of density.

The only case of error which can arise from a reliance on the density is where the milk is especially rich in fat, when it may also have a low density; hence if the density is low the question arises with the inspector, whether the milk is really poor or very rich in fat. To settle this, an accurate determination of fat is not necessary, and the Feser's latoscope has been found very convenient for that purpose. It has the advantage that it may be carried with the Inspector, and a determination of fat made in the presence of the dealer.

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SPECIAL REPORTS BY E. H. BARTLEY, M.D., CHIEF CHEMIST.

REPORT ON FOOD PRESERVATIVES. "REX MAGNUS" AND "VENETIAN RED."

December 3, 1883.

I have the honor to report the examination of two food preservatives lately found in use in this city. The one is known as "Rex Magnus," and has been used to preserve milk and other articles sent to this city.

This article has been extensively advertised by the Humiston Food Preservative Company of Boston, which has quite recently suspended. It has been endorsed by agricultural editors and by some chemists, and even medical men. It is composed principally of a mixture of salt, borax and boracic acid, the borax being added to make the acid soluble in water.

The quantity recommended for the preservation of milk is such as to give each quart of milk about 90 grains. This preserves the milk quite well, and is tasteless and odorless. As a preservative, if it could be regarded as harmless in itself, as represented, it seems all that could be desired; but, as boracic acid has become quite a popular antiseptic of late, and as its uses become more extensive we begin to hear of cases of poisoning by it. *Schmidt's Jahrbücher* cites a case of undoubted poisoning from this agent, following the injection of a four per cent. solution for chronic diarrhœa. In the *Medical Times* for August 25, 1883, Dr. L. D. Brose reports a case of fatal poisoning by the application of the powdered acid to an ulcer on the thigh. The symptoms were those of gastro-intestinal inflammation with obstinate diarrhœa and vomiting, rapid, weak pulse, low temperature, intense acidity of the urine, and almost complete suppression preceding death. The liver and kidneys were the principal organs affected. Other cases have been reported. As a child one year old will consume a quart of milk in 24 hours, it is, in my opinion, unsafe to allow the use of this preservative in the city for this purpose, in view of the dangers to young children. Ninety grains a day of a substance like boracic acid, which must be excreted by the kidneys either unchanged or in the form of sodium or potassium borate, must be a severe tax upon those organs.

I wish also to call your attention to another food preservative, called Venetian red, used to incorporate with the meat in making Bologna sausage, partly for the purpose of preserving it and removing the taint of the partially spoiled meat, and partly to impart a bright red color to it. It is composed of borax, saltpetre (potass Nitrate) and Venice red (ferric oxide.) As to the quantity of this powder used I cannot speak, but as to its wholesomeness this much ought to be said: While a small quantity might not be injurious in an article that is rarely eaten at many meals in succession, and in this respect is less objectionable than the one above mentioned, yet, if by its use, stale or partially decomposed or "*tainted*" meat may be used without detection, this fact alone should cause its use to be prohibited. The very object for which it is intended, viz., to allow the use of spoiled meat, is sufficient to condemn it. Perhaps the same argument might be used against "Rex Magnus" when employed to preserve milk. If milk by the use of this article may be kept three or four days without becoming sour, it will not necessitate as much care on the part of the farmer or dealer in handling. Stale milk, which is not as wholesome as fresh milk, may thus often be sent to the market instead of the latter.

REPORT ON A CASE OF POISONING FROM CANNED TOMATOES.

March 21, 1884.

In accordance with your request I have examined the tomatoes said to have poisoned the family of Mr. Kolyer, of 33 Clermont avenue. I visited the house on the 16th and could not obtain either the can or any of the tomatoes used. I learned that when the can was opened it was noticed that the color of the tomatoes was unusually light, being yellow instead of red. After cooking, those who ate them noticed a flat taste which was very marked and which was not easily corrected by salt and pepper. I did not get any of the vomit or fæces of any of those poisoned. I then visited the grocery store where the tomatoes were bought, and found that the grocer did not know the case from which he sold the can to the Kolyer's.

On careful examination of those of the same kind and brand found at the store, I could find no evidence of the cans having been used before. To all appearances the cans are new and soldered with resin, except the small cap on the head of the can, which is soldered with solder after cleaning with an acid solution of chloride of zinc, which is frequently used in soldering. This solution is usually applied with a brush to the edge of the hole the head of the can, and a small amount of the solution might d its way into the contents.

The analysis of the contents of one can from the grocery gave traces of tin, lead and iron, but not in sufficient quantities to give acute poisoning.

In looking for an explanation of the symptoms of poisoning seen in the Kolyer family, I am inclined to the belief that they were either due to chloride of zinc, chloride of tin (probably the former), or to the natural spoiling of this can. The chloride of zinc might bleach the color of the tomatoes and also give the flat taste already spoken of. The quantity of chloride of zinc necessary to produce the symptoms would not be large, and the symptoms, as I had them described to me by Dr. Johnson and the patients themselves, correspond more nearly with this poison than any other with which I am acquainted.

REPORT ON A CASE OF POISONING FROM CANNED APPLES.

April 10, 1884.

I present herewith a report of my investigation of the cases of poisoning in the family of Mr Feeney, of 16 President street, attributed to eating canned apples.

On visiting the house I learned from Mr Feeney and wife that both the latter and her eldest daughter were aware of the fact that the apples were spoiled, and that it was not intended that the children should eat them. After opening the can, which was very much bruised and crushed, it was noticed that the color of the apples was dark blue and the odor unpleasant. A part of the contents was poured out upon a dish and left upon a table, and the two children, aged respectively 7 and 9, ate of them without cooking. No other members of the family ate any of the fruit. Neither the can or its contents were preserved.

At this date both children are slightly feverish (Tem. 100° F.), are desquamating, and have slight soreness of the throat, with enlarged cervical glands, closely resembling the symptoms of children recovering from *scarlet fever*, so closely indeed as to be very suggestive.

On examination I found 54 cans of the same lot of apples at the store of Messrs Johnson and Thompson on Columbia street.

Among these there were six "swells" or fermenting cans, and one or two "re-processed" cans.

I could not determine whether the can in question was a "swell," "re-processed," or honest one, but as the can was bruised, air might have been admitted by a broken seam and the fruit spoiled in this way. The little girls did not notice any unpleasant taste when they ate the apples.

Another can from the grocery, on analysis, did not contain any metallic poison.

It is a matter of regret that in such cases the analyst is not furnished with the poisonous material, the vomit, or alvine discharges, from which to form an opinion as to the cause of the symptoms.

Inasmuch as such cases of poisoning occur but rarely, considering the large quantity of canned food consumed, it is useless to examine the contents of any can except that of the one causing the poisoning, or supposed to have caused it. This is one reason why investigations of this kind have generally proven unsuccessful in detecting the poison. Another cause of this failure lies in the difficulty of isolating the organic poisons, especially when their true nature is not known; and I am not aware that the true nature of the poisonous principle of decomposed fruit has ever been definitely determined.

That such poison exists can hardly be doubted, and was probably present in this case.

It is time that the consumers of canned goods should learn:

First. That spoiled or decomposing food of any kind is dangerous.

Second. That swelled cans, as a rule, should not be used for food, and especially without thorough cooking. This swelling of the ends of the can can be seen very easily on inspection.

Third. That any marked change in color, odor, or taste of any can of food should condemn it.

Fourth. That no canned articles should be allowed to remain in the can for any length of time after opening.

Attention to these simple rules would, in my opinion, materially lessen the number of accidents of this kind.

In conclusion, I would recommend that physicians and others desiring an examination of such cases of suspected poisoning, always see that the material be saved, and also the discharges of the persons affected.

REPORT ON A CASE OF CHEESE POISONING.

I wish to report the following facts in relation to the sample of cheese from the grocery of Mr. Luben, corner of Myrtle and Marcy avenues, referred to me for examination.

I visited the grocery store above mentioned and found three whole cheeses and one small piece from the one said to have caused the trouble reported.

The appearance of the cheese was good with the exception of the color, which was rather high, and probably artificially colored with anatto. In order to test the validity of the complaint I ate a piece of the cheese cut from the centre of the portion at the store, about two inches square and one-half inch thick. This occurred at 4 P. M. At 8 P. M. I was seized with vomiting, diarrhœa and cramps in the bowels which were severe and lasted two hours, and might have continued longer without medication.

I do not think any other thing eaten could have caused my sickness. I examined the cheese for mineral poison with negative results.

REPORT ON CHEESE POISONING.

August 13, 1884.

I have the honor to report the following facts in relation to the cases of supposed poisoning in the family of C. Thomsen, 625 DeKalb avenue, from eating cheese on the evening of August 5th.

There were three children who ate of the cheese and three adults, but the latter experienced no unpleasant symptoms. The cheese was eaten at 8 P. M. and the children retired very soon thereafter. At 9.30 P. M. the first one was taken sick and vomited profusely; soon afterward the other two began to vomit also, and continued to do so until Dr. Sanford was summoned at about 2 A. M. Two of the children were said to have vomited blood and lumps of cheese not disintegrated.

In addition to the cheese the children ate some veal which had been cooked on Sunday the 3d inst., and some bread. About half a pound of the cheese was consumed by the six persons, but the larger part of it by the children.

The same cheese was eaten in considerable quantity by five other families without injury.

An examination of the cheese sent to me by Dr. Sanford revealed nothing of a poisonous nature.

The symptoms of the children were those of a severe emetic, and not those of a corrosive or active irritant poison.

From all the facts I can get, I am of the opinion that the sickness of the children was due to indigestion, and there are no proofs that the cheese contained any poison or deleterious substance.

REPORT ON COFFEE POLISHING AND COLORING.

May 17, 1884.

I have the honor to report the following results of my investition into the coloring matters used by the N. Y. and Brooklyn d N. Y. and Baltimore Coffee Polishing Companies, situated Furman street:

On visiting the stocks of the N. Y. and Baltimore Company the following coloring agents were found, and samples of each were taken, and are still in my possession :

French Chalk (white), also called soapstone, or talc, is a silicate of magnesia.

Gum arabic.

Charcoal, from wood.

Drop Black—Animal Charcoal, or burnt bones.

Yellow Ochre—A mixture of clay and hydrated oxide of iron.

Venetian Red—A red earth, mostly oxide of iron and clay.

Chrome Orange—Chromate of lead, mixed with yellow ochre. Poisonous.

Burnt Umber—Differs very little from ochre in composition.

Silesia Blue—A mixture of ochre and Prussian blue. Gives off cyanogen abundantly on heating.

Turmeric—The powdered root of *curcuma longa.*

At the N. Y. and Brooklyn Mills I found—

Venetian Red.

Yellow ochre.

Turmeric.

Indigo and Indigo Extract. (This latter is a sulphate of indigo, or indigo carmine.)

Persian Berries, with ochre, giving a grayish green-colored pigment.

Of these colors I would select two, the use of which, in my opinion, should be prohibited at once—viz., *chrome orange* and celestial blue.

The remaining colors, while not so injurious as these, are used to deceive the public, and should be regarded as an adulteration. Coffee which has become spoiled, or decolorized from sea water, or in any way rendered unsalable, is sent to these mills, by their own statement, and made to appear like a good article. Green and unripe coffee is thus rushed into the market, and given the brown color of age. As the object to be attained by the use of these colors is to deceive the public it should be looked upon as an illegitimate business.

I have examined these coloring matters for arsenic, copper, lead and antimony, and have found only the chromate of lead, as above stated.

On examination of the coffee itself the lead was found to adhere in considerable quantities to the beans. The examination of 20 samples of polished coffees purchased in open market but not traced to either of these companies, shows that the use of lead and Prussian blue are very common.

On treating a portion of the coffee with dilute hydrochloric acid, filtering, passing sulphuretted hydrogen through the solution to remove the lead, and adding nitric acid, I was surprised to find a large quantity of cyanogen gas to be given off with rapid effervescence.

As Prussian blue is insoluble in dilute hydrochloric acid, it would seem to indicate that there is either a soluble cyanide used in some of these coffees, or that the blue mentioned undergoes decomposition in the presence of the hydrochloric acid. I hope to be able to examine further into this question.

September 30, 1884.

I beg leave to report the following additional information in regard to the coloring matters used by the New York and Brooklyn Coffee Company, doing business at Harbeck's Stores, on Furman street. The only new coloring matter found on a recent visit to this company's works was a lake, prepared as follows: Persian berries, or quercitron, is exhausted with
hot water [illegible] filtered; alum is then added, and then sal soda
[illegible] ntity to precipitate the coloring matter as a
[illegible] lake. This is then separated, dried and
[illegible] to form the desired color, an olive green.

I am not in possession of any knowledge which would offer an objection to its use.

A visit to the New York and Baltimore Company did not reveal any new colors in use at their works. Dutch pink, before reported upon, is the color principally used.

June 16, 1884.

I have examined the color sent to this office from the New York and Baltimore Coffee Company known as "Dutch pink," and find it different from the one which I obtained and reported upon as containing arsenic and chromate of lead. This color does not contain either of the above harmful ingredients, or any other ingredient which I can regard as harmful.

The color reported upon as "Dutch pink" is different from the last one obtained, and from any other color *previously* obtained from this establishment.

REPORT OF A LARGE NUMBER OF CASES OF POISONING FROM EATING ICE CREAM.

July 14, 1884.

I present herewith the report of the investigation of the poisoning of a large number of persons by ice cream, bought of Mr. Gerken of 829 Fulton street on July 4th.

The number of persons said to be affected is estimated to be something over a hundred. As far as could be ascertained, the cream which proved to be poisonous was confined to that which left the store after 12:30 P. M. No cases have been reported as occurring previous to about 2 P. M. on that day. As a large quantity of cream left the store in the early part of the day, from the use of which no harmful effects resulted, as far as could be learned, and as the same utensils were used during the entire day, it seems to me proper to conclude that the poison could not have come from the utensils.

A thorough examination of the freezer and of the storage cans gives no proof that they could have poisoned the cream, as they are all tin-lined copper vessels. Moreover, the same vessels have been in constant use both before and since the occurrence, and with no unpleasant results.

The flavors used in the cream were vanilla and lemon. Thinking of these substances as the possible cause of the trouble I examined into the matter. I found in the workroom two large one gallon bottles; one containing the extract of lemon bearing the label of W. D. Hoag, 292 Fulton street, N. Y., and which is a pure extract of lemon peel dissolved in alcohol; the other contained the extract of vanilla, bearing Mr. Gerken's own label, dated March 27th. Each of the bottles contained but a small quantity of the extract, and I was informed that the extract of vanilla was made by himself from the vanilla bean; in proof of which I was shown a considerable quantity in the process of making at the time of the inspection. The vanilla flavor used by Mr. Gerken has been taken from the bottle above mentioned since March 27th, and it seems impossible therefore that the flavoring material could have had any part in the trouble on this particular day. It seemed to me unnecessary to look either to the eggs or the sugar for the source of the poison.

The only other substances used in the preparation of the cream were milk and cream. As I learned both from Mr. Gerken and Mr. Comfort who supplies him with milk and cream, no milk was obtained that day; all that was used being delivered the day previous. The milk was used in the preparation of the cream made in the morning, from which no cases of poisoning occurred. On making inquiries as to the cream used that day I found that that used in the early part of the day was delivered the day before, while that used in the afternoon was delivered in two cans about 7 o'clock on the morning of the 4th. From these circumstances it would seem that the source of the poison was one or both of these two cans of cream. As there was a suspicion in the mind of one of the physicians who attended some of the cases that the poisonous agent was some salt of copper, the ice cream was submitted to an analysis. There were three samples furnished me for analysis. One was furnished by Dr. Griswold, who stated that he obtained the sample from Mr Reid of Adelphi street, whose family had been affected by it. The other two were furnished by Mr. Gerken.

The analysis showed no evidence of any poisonous metallic substance. Three other physicians were visited who had seen in all thirty cases, and upon inquiry I learned that the symptoms, as seen by them, did not suggest metallic poisoning of any kind. The symptoms in most of the cases were simply vomiting and great depression, followed by colicky pains and in some cases by diarrhœa. While a large number of persons were affected, not all who partook of the cream were made sick; nor was the severity of the symptoms in all cases proportional to the amount eaten.

In some families but one was taken sick, while all ate of the cream. The method of freezing ice cream would preclude the possibility of the poison not being evenly distributed throughout the mass. It must therefore be concluded that idiosyncrasy had a great deal of influence in the operation of the poison. This is not the history of metallic poisons as a rule. I am therefore obliged to conclude that the poison, or *depressing emetic*, as it really was, was organic.

During the analysis of the cream I noticed a very offensive, putrid and disgusting odor of the fluid. The odor was well marked, and may suggest an explanation of the poisonous effects.

In attempting to trace the cream to its source I found that it came from the dairy of Messrs. Comfort, in Orange county, and that they buy their milk from 52 different farms. This at once prevented the possibility of tracing the cream to the farm from which it came, and an intended visit to the farms was abandoned. There are a number of possible explanations which suggest themselves, but as they cannot be proven they have little value here.

It is to be regretted that the circumstances are such that the investigations could not be extended to the farm where the milk and cream came from.

Out of 27 cans of cream coming from the same dairy that day none have caused trouble excepting the two referred to in this report.

In conclusion I would say that, so far as my investigations go, I see no cause for thinking that Mr. Gerkin was in any way responsible for the accident.*

I shall procure a list of the dairies from which the cream was obtained and endeavor to have them inspected, to see if some cause cannot be found there.

REPORT ON SODA WATER APPARATUS.

September 18, 1884.

In accordance with your instructions, I have inspected the soda water apparatus at the places named below, with a view of ascertaining whether copper is contained in the waters or syrup drawn from them.

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*Since writing the above report I have learned that gelatine was used by Mr. Gerkin at the time and am inclined to think from the putrid odor and other reasons given elsewhere in this report, that the cause of the sickness was putrid gelatine.

STREET NUMBER.	STORAGE FOUNTAIN.	DRAUGHT FOUNTAIN.	WATER SUPPLY.	COPPER IN SYRUPS.	COPPER IN MINERAL OR SODA WATERS.
288 Myrtle avenue	Steel	Whitfield	Elfers	None	None.
314 "	"	Puffer Co	"	Copper found	Copper found.
323 "	"	"	Russell	"	"
500 Henry cor. Sackett st	Tin washed Cop.	Tufts		None	Kissingen, Copper found.
305 Court street	Steel	Puffer Arch	Elfers	Syrup in glass.	None.
308 "	"	" Co	Mathews	Clean plug daily	"
146 Smith street	"	" Arch	Russell	Kissengen contains tin	"
162 "	"	" Arch	Russell	None	"
138 "	"	Mathews	Elfers	"	"
? "	"	"	Light Bros	"	"
171 "	"	Puffer Co	"	Copper found	Copper found.
228 "	"	Mathews	Mathews	None	None.
35 Flatbush avenue	"	"	"	"	"
54 "	"	Puffer Co	Byrne	Copper found	"
65 "	"	Mathews	Russell	None	"
575 Fulton street	"	"	Light Bros	"	"
546 "	"	Puffer Co	"	Copper found	Copper found.
591 "	"	Tufts	Alpheus		
624 "	Glass lined	Tuft's Arch	Ridgewood	None	None.
725 "	Steel	Mathews	Mathews	"	"
741 "	"	Zudiken	Light Bros	"	"
670 "	"	Mathews	Mathews	"	"
796 "	"	Tufts	?	"	"
793 "	"	Puffer Co	Mathews	Copper tr.	Cop. decided.
795 "	"	Tuft's Arch	Elfers	None	None.
19 Greene avenue	"	Bigelow	Mathews	"	Copper trace.
32 Fifth avenue	"	Puffer Co	Own make	"	None.
109 "	"	Lippincott	Byrne	"	"
252 "	"	Dowse	Mathews	"	Copper found.
Cor. 3d st. and Fifth av.	"	"	Light Bros	"	"
327 Fifth avenue	Steel	Puffer Arm	Mathews	"	None.
435 "	Tin washed Cop.	Mathews	Russell	"	Copper found.
594 "	Steel	"	Light Bros	"	None.

Street Number.	Storage Fountain.	Draught Fountain.	Water Supply.	Copper in Syrups.	Copper in Mineral or Soda Waters.
614 Fifth avenue	Steel	Mathews	Mathews	None	None.
621 "	"	"	"	"	Copper found.
57 Broadway	Tin washed Cop.	Tufts	Own make	"	Copper trace.
75 "	Steel	" Arch	Elfers	"	None.
117 "	"	"	Elfers	"	"
176 "	"	Mathews	Mathews	"	"
244 "	"	Puffer Co	Mathews	Copper found	Copper found.
316 "	"	"	Own make	None	
319 "	"	Tufts	Elfers	"	None.
554 "	"	Mathews	Elfers	"	"
588 "	"	"	Mathews	"	"
369 "	"	"	"	"	"
508 "	"	"	"	"	"
137 "	"	Tufts	Own make	"	"
484 Myrtle avenue	"	Puffer Comb	Elfers	?	Copper found.
586 "	"	" Co	Elfers	Copper found	"
614 "	"	" "	M'th'ws & Elf'rs		"
33 Atlantic avenue	"	" "	?	Syrup in bottles	None.
404 "	"	Mathews	Mathews	None	"
94 Smith street	"	Tufts	"	"	"
169 Atlantic avenue	"	Mathews	"	"	"
295 "	"	Tufts	"	"	"

	Inspection.	Copper Found.		Inspection.	Copper Found.
Mathews	19	2	Lippincott	1	0
Tufts	12	2	Whitfield & Son	1	0
Puffer	18	11	Bigelow	1	0
Puffer Combination	2	2	Tiediken	1	0
Dowse	1	0			

Note.—One of the instances in which copper was found in the water drawn from a Mathews fountain, and in both of the cases of the Tufts apparatus the copper probably came from copper fountains, and not from the draught fountain.

From this series of examinations it will be seen that the use of copper fountains (tin washed) and the use of certain forms of stop-cocks will contaminate the waters drawn from them with copper, as pointed out in my former report. It will also be seen that no attempt was made to inspect any particular district, but they were taken at random in various parts of the city.

Although inquiry was not made in many of the stores visited yet five druggists had seen cases of nausea or sickness from drinking soda water. In three of these cases several persons were sickened, while in two, but one or two cases occurred. Since I began this investigation my attention has been called to a number of cases of sickness supposed to have been caused by drinking soda water, and I am of the opinion that many cases of slight illness occur which are not reported to either the druggist or physician. I am of the opinion that the use of any faucet or fountain which exposes a surface of brass, copper or lead to soda water or acid syrups should be prohibited.

REPORT ON SAMPLE BLOODY MILK.

October 23, 1884.

On the 16th inst. a complaint was referred to me for investigation, that the Westbury Dairy Company on Atlantic avenue near Fourth avenue, had delivered milk containing blood on that morning, to two families living at 555 Atlantic avenue, also, that several members of these families had been made quite ill by it.

I visited the house above mentioned, occupied by Mr. Melville and another family. I was told by Mrs. Melville that her husband, two young daughters and herself had been made sick by the milk, and that one or two members of the other family in the house had been made sick by it.

After securing the milk remaining in the house, I asked to see the children who were still sick. I found both little girls, aged about eight and ten years, with slight fever, furred tongues, and complaining of headache—in one quite severe.

On inquiry, the father said that the girls were suffering with malaria.

He also admitted that he had vomited after taking the milk, but that he had no proof that it was the milk that caused his sickness.

I received the impression that there might be a reasonable doubt as to the milk having caused the sickness in the family, and on a second visit to the house Mr. Melville was unwilling to say that it was due to the milk.

At the store I learned that the milk had been received from George Downing, at Glen Head, L. I. That the milk was received in the night and sent out before daylight the next morning. When the driver noticed the color at daylight he reported it to the store, and was sent back over his route to take back all the milk and notify all the parties not to use it. In answer to a letter to Mr. Downing I received a letter saying that the blood originated from a wound made the previous day in the udder of one of his cows; that the cows were milked in the dark, and the blood was not noticed until the next morning. I visited Mr. Downing's farm in company with Dr. De Long, and verified his statements. The occurrence was evidently an accident, and as the blood was not putrid, I should recommend no prosecution.

REPORT ON THE USE OF COLORING MATTERS IN THE MANUFACTURE OF VERMICELLI.

October 30, 1884.

I desire to report to you the result of an examination of the methods and colors used in the manufacture of maccaroni and vermicelli in this city.

In most cases a very good grade of flour is used, but it is a practice with some makers to use an inferior flour, and to whiten it with pipe-clay or kaoline. No clay was found in any of the seven factories visited.

The coloring matters used in this city are limited to saffron, turmeric and chromate of lead. Eggs were not found in but one of the places visited, nor more than a sample box of maccaroni colored with them.

Of saffron and turmeric enough is added to give the desired tint, and as this is only a small quantity, I can see no injury to health to come from their use. One manufacturer, Mr. Kappl of 105 Moore street, was found to be using chromate of lead, and the color was afterward found by analysis in his maccaroni. This practice has undoubtedly been much more common than at present, but owing to some publicity already given to it by the New York City authorities, most manufacturers had stopped its use before my inspection. The use of so poisonous a color as chromate of lead in coloring any article of food is certainly a reprehensible practice, and measures must be taken to stop it at once.

REPORT OF THE USE OF FUCHSIN IN COLORING MEAT.

January 3, 1885.

I desire again to call your attention to the practice of coloring certain meats.

Some time since I called attention to the use of Venetian red to give a bright red color to sausage.

I have lately received some head-cheese from Inspector Hobday, which was given a bright red color by anilin red or *fuchsin.*

The object of using these colors is to give a bright fresh meat color to meat which has lost that color. As I said in the former report upon the subject, independent of the nature of the color used, it seems to me to be an objectionable practice; because it enables the manufacturer to use meat which is not fit to be used without it. As is well known, it is a common practice to make such composite foods from meat which has become unsalable in the shops. The temptation to use tainted or spoiled meat is great, provided that it can be relieved of its taint by suitable salts, and then colored to make it look bright again.

The manufacturer colors his meats to please a public taste for a bright red color; but when the public learn that such meat may be colored with harmful colors, while the meat itself is the worst salable meat in the market, the manufacturer will not be called upon to practice it. Anilin red is in itself an objectionable color, because many samples in the market contain arsenic.

In the case here mentioned no arsenic was found, but I regard it unsafe to permit it to be used, for reasons here stated.

This meat was manufactured by Mr. Jorg, No. 625 West Forty-seventh street, New York.

REPORT OF CANNED FRUITS AND JELLIES CONTAINING LEAD AND TIN.

January 12, 1885.

I have the honor to report that we have in our possession 316 cans of preserved fruits and jellies, which were seized on the 8th instant, after an analysis of three cans taken from three different stores. These fruits are put up in tin pails containing about two pounds each, the lid not being closed air-tight. The tin of the can in one instance was found to contain lead, and in all cases tin could be found in the fruit. Tin is quite readily attacked by organic acids, air and moisture combined, hence the difference between these *open fruits* and ordinary goods. We have treated these goods with carbolic acid, y are awaiting removal from the laboratory. In justice P. J. Ritter, the manufacturer of these goods, I must say that he had already removed the cans from some of the stores and replaced them with glass jars. He has promised to withdraw all open cans from the market as soon as possible.

SECOND REPORT ON CANNED GOODS.

January 29th, 1885.

After an analysis of a number of cans of these goods put up in tin pails and freely exposed to the air, we have decided that they are open to serious objections. Accordingly, acting under your directions, about 340 cans of P. J. Ritter's manufacture were collected from the grocers in the principal streets, and a receipt for the same given. At the request of Mr. Ritter's agent they were carbolized and delivered to him, and he furnished the same kind of goods, put up in glass jars, to the grocers from whom they had been taken.

On the 24th and 26th insts. the chemists were sent through the principal streets to inspect the stores in regard to other brands put up in the same way, and they instructed the grocers, found to have such goods, to neither sell nor dispose of them without permission from this Department. (See Sec. 42 Sanitary Code.)

The goods were collected on the 28th and 29th, except at the following places, and held for analysis: N. Lucken, 508 Bedford avenue, who had 22 cans at the first inspection, but which he had disposed of previous to the second visit; Robert Carson & Co., 912 Fulton street, corner Washington avenue, who had five cans at the first inspection, and who declined to deliver the goods on the second visit. A third visit resulted in a similar refusal.

These two cases bring up a point which I desire instructions upon from the Counsel of the Department.

Section 42 of the Sanitary Ordinances gives an inspector power to remove from any store, any meat, fish or vegetable food, after an agreement of two other competent persons that it is unfit for food. This ordinance is so construed in regard to meats.

It will be observed that one of the men here named disposed of the condemned goods after he had been instructed not to do so, the other, by his foreman and clerks, refused to permit the goods to be removed.

THIRD REPORT ON CANNED FRUITS AND JELLIES.

February 14, 1885.

I have the honor to make the following report upon certain canned preserves and jellies sold in this city. The goods referred to are put up in unsealed tin cans or pails. An analysis of a large number of these goods has shown that in nearly every instance they contain tin in considerable quantity, and in many cases a small quantity of lead; the latter probably derived from the solder used in making the cans. While tin does not seem to be affected to any considerable extent by the fruit acids in hermetically sealed cans deprived of air, the case, as here shown, is quite different when there is a free supply of air. Both tin and lead are dissolved under these circumstances, and, in my opinion, no fruits put up in this manner can be considered as safe. For this reason I have directed the inspector to go through all the principal streets and take from the stores all such fruits and jellies, which has been done.

Between six and seven hundred cans, or about 1,200 pounds, have come into our possession. About four hundred cases of these have have been treated with carbolic acid with the consent of the manufacturer or wholesale dealer, and afterward returned to them with the understanding that an equal value of unobjectionable goods are to be sent to the retail grocers from whom they were taken. In this way we have sought to prevent them from returning to this or any other market.

Nearly 300 cans are still in our possession and are undergoing analysis by the chemists, except in the cases where the dealers have given us consent to destroy them without such analysis. It seems advisable that the public should be informed of the cause of complaint against these preserves. It is proposed also to examine other canned goods, especially with reference to the so-called "swells" or cans which have undergone fermentation with the generation of gases in sufficient quantity to swell the ends of the can. Such goods are frequently seen upon the shelves of grocers, and are sold to the unsuspecting in spite of repeated cautions.

REPORT ON COLORING MATTER USED IN MANUFACTURE OF BOLOGNA SAUSAGE.

March 14, 1885.

I present herewith the results of an examination of a red powder reaching me to-day, accompanied by a note from Mr. J. Hampshire, stating that it is a "preparation for coloring Bologna and smoked sausages," and asking if it contained anything injurious to health. The mixture is composed of saltpetre, common salt, borax, alum and Venetian red. It will be remembered that I had the honor of making a report in December, 1883, upon a similar mixture then found in the market, in which I said: "While a small quantity ($\frac{1}{2}^{\circ}$) might not be injurious in any article that is not really eaten at many meals in succession, yet if by its use stale, or partially decomposed or tainted meat may be used without detection, this fact alone should cause its use to be prohibited." This abstract from my first report answers the question asked in this connection.

REPORT ON A SUPPOSED CASE OF POISONING BY CANDY.

March 18, 1885.

I beg leave to make the following report upon the case of supposed poisoning by candy, reported to have taken place at 194 Schermerhorn street on the 7th instant.

The investigations go to show that on Saturday, the 7th, Maggie, the ten year old daughter of Mr. Cobb, living at the above number, bought four pieces of a white candy at the store kept by Mr. Raye, at 67 Bond street, and ate them. The candy weighed six ounces. About an hour afterward she began to feel somewhat nauseated, and about five hours afterward began to vomit and to suffer some pain.

The vomiting continued at intervals for about 24 hours, accompanied with some colicky pain, headache, thirst, &c.

There was no burning in the region of the stomach and no diarrhœa. The symptoms, in other words, were those of an attack of what is known as *bilious vomiting*, and not those of acute poisoning. The quantity eaten deserves the notice that it was larger than most children would or should eat at one time.

The analysis of some of the same kind of candy, and of the same "batch" from which the girl bought, showed nothing unusual in its composition. It is made from ordinary white sugar, glucose, butter and vanilla flavoring.

It did not contain *terra alba*, flour, or coloring matter, and contained no arsenic or other poisonous metal.

Glucose is used by all confectioners in the manufacture of nearly all kinds of candy, and I am of the opinion that it could not have produced the unpleasant results, although the action of glucose upon the human organism has not been investigated as fully as could be desired.

The sickness in this case therefore was, in my opinion, the result of eating too freely of the candy, and not due to any poison in the candy itself.

REPORT ON POISON IN CANDIES.

August 20, 1885.

at on the 13th day of August I visited
icks street, for the purpose of ex-

amining the colors used by this firm. Among the colors found, which were mostly the coal tar colors, was one called a "sulphur yellow," which, on examination, proved to be chrome yellow, or lead chromate. This pigment being poisonous even in small quantities, notice was at once given to the superintendent and the use of the color stopped. The candies found to contain lead were sorted from the others and burned under my supervision.

The color in question was obtained in Boston, and the Superintendent claims that he understood that the Board of Health of that city approved of it. In this connection I would state that the colors in common use by the confectioners of this city are, as far as examined, carmine and coal tar colors. These have been examined for arsenic with negative results. I would call attention to some very dirty confection found in many stores. I refer especially to licorice gum-drops, which are seemingly made from sweepings, as the undissolved sediment would indicate. Two case of sickness have been reported to me within the past two years from eating the licorice drops. I have already seized a few of them. From the method of manufacture above indicated it would seem, a priori, to be very easy for any foreign matter to get into it.

REPORT ON CANDIES COLORED WITH CHROME YELLOW, AND CANNED TOMATOES CONTAINING LEAD.

August 25, 1885.

In my inspections of confectionery I have found a considerable number of samples containing chrome yellow. The candies which I have found to be most likely to be colored with this color are the yellow "lozenges" and yellow "conversation tablets." I have found some of these candies at the following named places:

460 Hicks street; 289 Columbia street; 107 Atlantic avenue; 129 Myrtle avenue; 181 Fulton street; 31 Myrtle avenue.

The last one was a yellow stick candy with a white core, the poisonous color being only in the outside layer.

I have also bought two cans of tomatoes from a quantity of thirty cans exposed for sale at 79 Atlantic avenue. The cans bought by me were two picked "swells" out of nine which the lot contained. These two cans were submitted to chemical analysis and found to have corroded the cans considerably.

The analysis showed traces of lead and copper, and 3.2 grains and 3.6 grains of tin. The tomatoes were in a putrid condition when opened.

REPORT ON THE USE OF ARSENIC IN THE MANUFACTURE OF WALL PAPERS.

March 27, 1885.

From our recent examinations of arsenical wall papers and fabrics it appears that much of the wall paper and even some fabrics sold in this city, contain arsenic in considerable quantities. That these sources of arsenic are real danger to the public health there can be no reasonable doubt, as will be seen from a reference to any work on toxicology. I would especially call your attention to a report upon the subject by Dr. F. W. Draper, in the report of the Massachusetts Board of Health for 1872, and by Professor E. S. Wood, in the report of the same Board for 1884. I also submit the correspondence respecting the presence of arsenic and other poisonous pigments in wall papers and textile fabrics presented to the House of Parliament, England. This subject has been fully investigated in these documents, and legislative action in other countries shows that those who have looked into the subject thoroughly have deemed it best to prohibit the manufacture and sale of arsenical and other poisonous pigments attached to articles of
n use. In view of these statements I would respect-
lvise some measures to control the manufacture of
l wall papers, confectionery, &c., in this city.

REPORT ON THE PRACTICE OF "GREENING" PICKLES.

May 23, 1885.

I present herewith a brief report and recommendations in relation to the practice of "greening" pickles. It is a well known practice and has been practiced for years; the object being to give a bright green color to pickles which have become yellow by lying in the brine used to preserve them. Some manufacturers add copper sulphate or blue vitriol to the water in which the pickles are heated, while others simply put a covering of sheet copper upon them in the bath and heat nearly to boiling for some hours. By either process enough copper is taken up by the pickles to impart a bright green color to them. Some analyses made by us show that a small pickle weighing less than one half ounce contained about two thirds of a grain of sulphate of copper, while larger pickles contained a less proportionate amount.

The medicinal dose, as an astringent, is from ¼ to 2 grains. Three of these very small pickles would contain the full medicinal dose. One fourth of a pound of these pickles contained 5 grains or the minimum emetic dose. They would probably not produce their emetic effect, because the copper would be yielded up from the pickles gradually.

The effects of copper are similar to those of lead poisoning, with more digestive disturbances and less nervous manifestations. Aside from the actual harm likely to be done by the use of copper in pickles I find that the universal desire of the manufacturers is against it. They do it to supply a demand which comes from an ignorant few in every community.

In view of these facts I respectfully recommend a conference with those engaged in the manufacture of pickles, chow-chow, mustards, &c., upon this matter, with the idea of preventing the manufacture and sale of these articles of food containing copper.

REPORT OF A CASE OF POISONING FROM "GREENED" PICKLES.

I have the honor to submit the following report of the case of Maggie Martin of No. 97 Adelphi street, who died on the morning of June 29th from the effects of a "greened" pickle which she ate on the evening of the 27th. The principal points in the history of the case are as follows:

On Saturday evening the 27th of June, the little girl, a healthy child of seven years, accompanied a lady friend of the family to the store of Mr. John Lockitt on Myrtle avenue, where some dark green pickles were procured. One of the pickles was given to the child, who ate a little more than one-half of it. She also ate a few (perhaps 12 or 15) cherries. About two or three o'clock the next morning she began to be sick. The symptoms were vomiting of green colored vomit, pain, and tenesmus. The case passed rapidly into an acute dysentery. Alarming collapse set in about six o'clock in the evening.

On the evening of the 28th, 20 hours after the first sickness, Dr. David E. Callaghan of 88 Vanderbilt avenue, was called to see the child, and found her in collapse.

He gave her the usual treatment in cases of this kind, but she did not rally, and died about 3 o'clock on the morning of the 29th, at about 24 hours after the beginning of the sickness. The rapid course of the disease and the very unusual collapse, led the doctor to suspect that it could not be an ordinary case of dysentery. This was made still more probable, on inquiry, by the fact that he learned that she had partaken of a considerable portion of a large dark green pickle. Fortunately he secured a portion of the same pickle, and after satisfying himself that it contained copper he brought it to our notice.

From an analysis of that portion furnished us we calculate that the pickle eaten must have contained about two and a half
copper sulphate. That the pickles were colored with
of copper was proven by the analysis; but whether
r remained as sulphate in the pickle it is impossible

At the autopsy there was little revealed beyond a pronounced colitis evolving the whole extent of the colon, a marked congestion of the intestinal mesentery, and a slight inflammation of the mucous membrane of the stomach. The analysis of the stomach, and its yellowish, semi-liquid contents, showed considerable copper.

No attempt was made to estimate it quantitatively, as the child had vomited several times, and a large part of the copper was thus lost. The first material vomited was noticeably green—an unusual thing in an ordinary attack of indigestion. The liquid found in the stomach had the appearance of having been regurgitated into it from the intestine. The analysis of the intestine and colon did not show any copper, or more than a trace.

The intestine and colon were almost entirely empty, except at the upper end of the intestine, which contained a small quantity of semi-liquid material similar to that found in the stomach.

The immediate cause of death was heart failure. Two explanations are possible of the severe and rapid collapse—viz.: The large extent of surface involved and the presence of some absorbed poison in the circulation. The sympathy between the large intestine and the nervous system is not so great as that between this latter and the small intestine or stomach. The extent of surface involved does not therefore seem to me to offer a complete explanation of the rapid collapse in a healthy child of her years. If we admit that the collapse and heart failure *were* due to the inflammatory trouble in the colon, we are then met with the question as to the cause of so extensive an inflammation appearing in a previously healthy child from a little indigestible yet thoroughly cured pickle. It is certainly a very rare occurrence to find a case appearing idiopathically in such circumstances as this child was subjected to, and at this season of the year, with no epidemic of such diseases in the city.

In relation to the question of the copper, as an ætiological factor in the production of the disease, the following points are worthy of note: That the copper was taken, and in about the quantity above named, there can be no doubt. That the dose taken was very large for a child of that age is certain, and that the copper taken in this form must be liberated in the stomach or intestine gradually, and not all at once, is equally certain.

Administered in this way it could not exercise its emetic effect until a considerable portion of it had been absorbed, and produced whatever physiological effect it might have. In other words, the manner of administration must prevent, to a great extent, the local action and favor its systemic. action, and thus explain the absence of any evidence of an active irritant poison in the stomach or upper intestine. Many of the ordinary symptoms and post mortem appearances of copper poisoning were absent in this case. There were present, however, the thirst, headache, epigastric pain, purging, extreme debility and a yellow colored skin. The last two of these are strongly suggestive of copper poisoning, although it could not be said that they could not be produced by any other agency.

Taking all these points into consideration it seems to me that the copper could not have produced the colitis by its local irritant action, previous to its absorption.

We are then left with the question as to whether two or three grains of copper sulphate administered in small, often repeated doses, extending over a few hours, and given so well diluted that it could not act as a local irritant, could produce an extensive colitis in a child of seven years of age.

Reports of cases show that inflammation of the stomach or intestines is not a constant or necessary post mortem appearance, but is usually found when large doses of a soluble salt are the cause of the poisoning.

In a case of acute poisoning reported by Maschka, and cited as a characteristic case by Blyth, bloody dysenteric passages were a prominent symptom. This does not, however, seem to be a common feature of the greater number of the cases reported.

I have reviewed this case somewhat at length because I regard it as a very important case, and one that should not go with a mere notice.

The evidence in favor of copper poisoning as a factor in the causation of the sickness is not conclusive, but certainly quite probable, and shows that the action of this Department in suppressing the sale of "greened" pickles is warranted.

REPORT ON POISONING FROM WATER ON THE BARK "DONNA ZOLA."

Several days since a case of considerable interest was brought to my notice by a letter from Dr. Belcher,* resident physician at the Long Island College Hospital. The source of the trouble was in the water. The iron water tank on board the bark was painted with a red paint, which probably contained lead, nearly a year ago. This tank was used to contain the drinking water which all on board must partake of. It was filled once or twice in Norway, twice in Spain, the last in Cadiz in November, 1884. Shortly after leaving Spain the captain and one of the crew were taken sick with symptoms that indicated lead poisoning, and on reaching Rio de Janeiro were obliged to go to a hospital. The tank was again filled at Rio Grande and again at Aracaci about the middle of February, 1885, this time from a small stream, or, according to some of the men, from a stagnant pool. The passage to New York consumed forty-three days. About two weeks after leaving Aracaci the captain (acting) was taken sick with symptoms of lead poisoning, and afterwards, one by one, every man on board. On reaching this port they were removed to the hospital, where one of them soon began to have convulsions, from which he died. On examination it was found that there was no canned goods or other probable source of lead in the diet used on the voyage. On turning to the water supply the facts above stated were elicited. An examination of the water taken from the iron tank by myself revealed the following facts: The water was of a straw yellow color, very turbid, containing an abundant sediment. The bottom of the tank was covered with a layer of this sediment, which was found to be partly organic and partly inorganic. An examination of the sediment, microscopically, showed it to be composed of various vegetable and infusorial organism and mineral matter. A chemical examination of the filtered water showed no lead, but an abundance of sulphates and some nitrates and nitrites. The sediment was found to contain lead in considerable quantity. These facts make it clear that the cause of this serious mishap was the paint used in painting the inside of this tank nearly a year ago. It is peculiar in that the most serious symptoms of lead poisoning appeared only after at least nine months had elapsed since the tank was painted. There seems to me to be several explanations for the late appearance of these symptoms. First—The first few times the tank was filled it was with a hard water, containing carbonates, which exert a protective influence upon the solution of lead in water. Later, a softer was used, and one containing nitrites and nitrates, which are known to have a marked influence upon the corrosion of lead pipes, and would act in a similar way to dissolve the lead from the paint, which would be taken up by the sulphuric acid and form an insoluble residue. The waters containing a considerable amount of organic matter, as this water has, exert a far more corrosive action than pure hard water, especially when freely exposed to the air. Second—When the paint was first put on, and for some months afterward, it adhered to the iron, and very little was dissolved by the hard water. As time went on the paint began to crack and scale off and form a sediment, which was continually stirred up by the rolling of the vessel, and was taken with the water. Third—Lead is a cumulative poison, and in taking small quantities it often requires months to velop the acute symptoms. Fourth—While in port the crew ould not be likely to drink the water from the ship. Moreover, as it is shown that the lead is not in solution, very little lead would be taken while the vessel is not rolling. These facts, taken with the fact that the first few months after leaving home were spent coasting along European ports where fresh water could be obtained at rather short intervals, would explain why less lead would be obtained during those months. I should strongly recommend that the owners of this vessel be requested to remove all the paint from the inside of the tank before taking on water from this port.

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*REPORT BY DR. BELCHER.

"The Norwegian bark 'Donna Zola' arrived in Brooklyn with the entire crew sick, and the patients were admitted to the hospital May 27th. The patients presented symptoms of chronic lead poisoning, and in consequence an investigation was made. The water tank on board the vessel was painted inside with red lead some time in July, 1884, and after allowing it eight days in which to dry it was filled with water at Copenhagen. This water was left in a few days, and then the tank was washed out and again filled at the same port. During August the tank was again filled at some port in Sweden, and again in September, in Spain. During November it was filled in Cadiz. Shortly after the captain and one of the men were taken sick with nausea, vomiting, diarrhœa, lead colic, &c., following protracted and obstinate constipation, and they were sent to a hospital in Rio de Janeiro some time in January, 1885, the mate assuming command of the vessel and taking from that port (Rio) a new man as mate with him. In February they again took water at Rio Grande and again at Aracaci, a small port in Brazil, from a stagnant pool of water. The vessel left the port of Aracaci on February 14, 1885, and after they had been two weeks out the captain (acting) was taken sick—lead colic, obstinate constipation, blackened gums, colicky abdominal pains, &c. One by one the crew came down with the same difficulty and presented the same symptoms. On admission the patients were greatly emaciated, weak, cachectic appearance, saturnized lead line along the gums, colicky abdominal pains, greatly constipated, and vomiting a greenish yellow material. No signs of lead paralysis. It seems that in addition to this drinking water the crew were obliged to eat poor quality of salt provisions, &c. The passage was forty-three days. One of the patients on admission presented symptoms of insanity, very weak, pulse small and compressible, emaciated, lead line along gums, had a fixed, meaningless stare, blank expression of countenance, could not answer questions, delirious, could not be kept in bed, vomiting a greenish material, and passing urine and fæces involuntarily. The patient had repeated convulsions and died on the 29th of May, 1885, at 2 P. M. An autopsy made by Dr. Ferguson showed nothing pointing to lead poisoning. On the 30th the vessel was inspected by Dr. William Belcher in company with the captain. The water tank was iron, with no lead in its construction. The water was taken from the tank in an ordinary tin dipper. The galley was found to contain no leaden utensils for cooking, the only vessels of suspicion being two copper cooking kettles. There had been no canned goods in the ship. The patients at present are improving slowly."

REPORT ON POISONS SOLD AS "ROUGH ON RATS" OR "RAT POISON."

June 13, 1885.

I desire to call your attention to certain poisons which are sold in this city in violation of the Penal Code (Section 402 and 404) of this State, relating to the sale of poisons.

There are in the market certain poisonous preparations which are sold by druggists under the name of rat poison, cobalt, insect powder, &c., with no attempt at restriction.

To specify, one called "Rough on Rats" is nearly pure arsenious acid, and can be bought by any one without a question. This preparation is becoming a common cause of accidents and suicides, if reports of the daily press are to be
l. In view of these facts I strongly advise that druggists
ers who sell these poisonous preparations be required to
m in accordance with the law governing the sale of
s.

REPORT ON WATERED "EVAPORATED" MILK.

In regard to the application of Mr. Geo. Mundy to be allowed to sell evaporated milk, properly diluted, as milk, the following objections are to be considered.

In the first place the accompanying report of the analysis of the milk show conclusively that about one-third of the fat has been removed from the milk before evaporating. This is certainly fatal to any permission being given for the sale of this milk under any circumstances. I shall have another analysis made, and if this is confirmed shall advise some action in the matter.

In regard to the sale of diluted milk, as milk, I would say that it is impossible to control the quantity of water added by the dealers. The moment it becomes known that a certain milk is made up with water, there will be too great a temptation to make it up to any desired quantity.

There is law prescribing how much water should be added to condensed milk to make normal milk, and in this case, four parts of water might be added, and yet the milk might be made to stand the test of specific gravity with other means. There would be little chance of convicting a man for adding a little more water if he were allowed to add a certain quantity.

Aside from these considerations, it is my opinion that the milk is not normal milk, after once being evaporated down to one-fourth the original volume, nor can it be made normal cows' milk by the simple addition of water.

I think chemical experience will bear me out in this statement, or at least my own chemical experience with a large number of children has led me to this conclusion.

Another objection to this practice of selling diluted evaporated or condensed milk, is the fact that it opens an avenue to the communication of disease through the water added. If we could insure that the added water should be perfectly pure distilled water, free from putrefactive or other germs, it would be safer than we could expect it to be in actual practice.

From the nature of the fluid, milk is a good cultivating fluid for many kinds of organisms, and it is therefore a dangerous fluid to which to add these germs, as may easily be done, and as has been done repeatedly to the sorrow of hundreds of families.

As a matter of public economy I can see no reason why permission should be given to any company or individual to charge the consumer for the trouble and expense of adding and transporting this water. The customer ought to be allowed to save that expense, and take the responsibility of watering his own milk, instead of throwing it upon milk inspectors. There seems to be reason to multiply objections to this application, and I have done so in this case, because I have repeatedly been asked by milkmen and others whether I would object to a milkman using diluted condensed milk to supply his customers in case of shortage.

SPECIAL REPORT OF W. A. DE LONG, M.D., INSPECTOR OF MILK,

ON MILK AND ITS ADULTERATIONS.

There is consumed in the City of Brooklyn daily 152,575 quarts of milk (not condensed). By these figures one is enabled to judge of its universal use as an article of food, and when it is remembered that a large portion of it is consumed as the *only* article of diet for infants and invalids, the necessity for it in its purity becomes apparent.

That it has been and is yet adulterated no one doubts, and the object of milk inspection is to prevent the practice, and give to the people pure milk.

July 1, 1883, I was detailed to inspect milk, and for the three months following there were examined 12,487 quarts, of which 2,535 quarts or 20 per cent were found to be adulterated, while in June, July and August, 1885, there were examined 22,575 quarts, with only 1,280 quarts below the standard equired by law, being less than 6 per cent. This change for he better has been accomplished by the prompt arrest of the ffenders, the fines imposed amounting to $3,065, the publicity the press has given them, the revocation of their permits by the Commissioner of Health, and their re-arrest if again found selling or delivering milk.

Where a person raises his own milk and it is found to have been adulterated, he is not only arrested and fined but his permit is revoked.

Leniency has been shown, upon their first offense, to dealers who purchase their milk, but, if continued, their permits, like the others, have been revoked and they arrested every time thereafter when found selling or delivering it. By these means over 50 adulterators have been driven out of the business and the sellers of pure milk have been correspondingly bettered. There is no reason why a milkman should purchase poor milk and not know it; public instruction has been given them by Doctor Bartley, and not a week passes but I have taught some of them the uses of the simpler instruments. The expense of the instruments is so small and their use so simple that a child can use them, and it is a poor excuse to say: " It is just as I bought it."

The police deserve praise for the assistance they have given me, and the police magistrates for the prompt manner in which they have punished the offenders. To another class praise is due for assistance. I mean the honest dealers, of which I am proud to say there are a great many. Whenever they have known of dishonest practices by others they have not only promptly notified, but have informed me just where I could catch them, and have aided in various ways. It is for their benefit that only pure milk be sold—then all stand on a common ground for competition; but if one is allowed to water *ad libitum,* he can afford to undersell the honest dealer and get his trade, many buyers only considering cheapness and quantity, not quality; yet ask these very people, and every one will say that they would rather pay a few more cents per quart for the pure article.

The usual amount of water the dealers adulterated their milk with, was 3 to 6 quarts per can—let us average it at 4 quarts. Assuming, according to the milk inspection of 1883, that 20 per cent. of it was watered (and I believe that to be a very low percentage), it follows that, as milk retailed at 8 cents per quart, the people actually paid 32 cents per can for 20 per cent of all the cans entering the city.

The number of cans by actual count is 3,814, 20 per cent of which is 763 cans at 32 cents per can amounts to $244.16 per day, or the modest sum of $89,118 per year. These figures may be startling, but it is the truth, and it is time that even more stringent measures should be adopted.

But this is only looking at milk as a commodity; it has a far greater value than that; it is absolutely essential to the lives of invalids and the very young, and for them we have no article of food to take its place.

Dr. Meigs says in his Infant Feeding and Milk Analysis: "That many infants might be saved who now die is shown by an examination of the mortality records of civilized nations. It is then seen that the relative number of deaths among the very young is enormously in excess of that in later life; and this will of course always be so, for even in vegetable as well as in animal life the younger individuals are much more delicate, and during the early portion of their lives surrounded with many pitfalls in the shape of disease and accident. Still, when it is considered what an enormous proportion of the deaths of infants under two years of age is from nutritional disorders, it becomes evident that many of them must be avoidable."

In this city, for the past ten years, over 60,000 children under five years of age have died, and of this number 13,429 have died from nutritional diseases. How many of these deaths can be attributed to impure milk we have no means of ascertaining, but it is safe to say that numbers might have been saved had that article been pure and wholesome.

The physician ordering two or three pints for a child is in his efforts to cure, because the milk is watered and ic juice is diluted to such an extent by it that the fails to digest it. How often do we see children brought up upon it pine and pine away in the city; send them to the country and when they return we hardly know them. Of course, pure air has helped, but to hear the parents talk of the difference in the milk we must believe that that article deserves the credit to a very great degree.

Physicians prescribing milk have sent samples to the Health Department to ascertain if it were pure before allowing the little ones to take it.

By pure milk I mean not only milk free from adulteration and skimming, but milk from healthy cows, properly fed and housed.

Frequently during our inspections have we found the milk from diseased cows mixed with the other milk and sent to the city; but the milk from that dairy has been prohibited from entering Brooklyn.

We should have as pure milk here as in the country. To secure this we must be on the alert all the time, making our inspections at all times of the day and night, and by promptly arresting and punishing every one dealing in an impure article. As the business is constantly changing hands, and as numbers of inexperienced persons are every year entering the trade, it seems to me that it would be advisable to refuse permits hereafter until the applicants have procured the necessary instruments for determining its purity, with a knowledge of their uses.

The instruments we use are the Lactodensimeter, Lactoscope and the Lactobutyrometer, and we contemplate giving during the Winter instruction in the use of these instruments to the milkmen, believing that greater and more exact knowledge will be of benefit to them in detecting any dishonest practices on the part of the farmer either in watering, skimming, or by the addition of other substances.

Respectfully submitted.

WILLIAM A. DeLONG, M.D.,
Inspector.

SOME EXPERIMENTS ON BURNING SULPHUR IN CLOSED ROOMS.*

BY W. H. KENT, Ph. D., CHEMIST.

In these experiments the following points have been considered: the action of sulphur fumes on various ordinary insects and different kinds of cloth, the amount of sulphur which may be burned in a given volume of air, the volume of gases resulting and the nature and extent of the decomposition of sulphurous acid in the presence of moisture after the combustion of the sulphur in the process of disinfection.

As being closely connected with these subjects we also include in this report the following statement of the physical changes which sulphur undergoes in the process of combustion; this we quote from Lunge's standard work on the Manufacture of Sulphuric Acid.

Sulphur melts at 111.5° C. (232.7° F.) and forms a thin light yellow liquid, which, on being more strongly heated, becomes darker and thicker; at 250° to 260° C. (482° to 500° F.) it is nearly black, and so viscid that it does not run out when the vessel is upset; at a still higher temperature it becomes thinner again, keeping its brown color; and at 440° C. (824° F.) it boils, forming a brownish-red vapor; but it begins to volatilize before boiling.

This is by heating out of contact with the air. When heated in the air the same change takes place until the temperature of combustion is reached, which, according to Lunge, is 260° C. (482° F.) 's fire and burns with a purplish blue flame forr' out 2,221 metrical units of heat.

'blished by the Committee on Disinfectants
on in the *Medical News*, Sept. 19, 1885.

In consulting the literature of the subject we find a very important article on the value of sulphurous acid as a disinfecting agent by Dr. G. Wolffhuegel, which in this connection should be noticed.

Dr. Wolffhuegel (*Mittheilungen aus dem Kaiserlischen Gesundheitsamte.* Vol. I, p. 188–233, Berlin, 1883) gives experimental work on the following six questions:

First. How may the requisite amount of sulphurous acid be with safety produced by means of burning sulphur in closed rooms?

Second. What method is best adapted to determine the amount of sulphurous acid in the air and the amount of gas taken up by the disinfected articles?

Third. To what extent does the amount of sulphurous acid in the air deviate from the amount calculated from the sulphur burned? What are the causes of this deviation and how is the loss to be limited?

Fourth. Does the gas formed distribute itself uniformly through the room, and do the articles in the room take up a large amount of the gas formed?

Fifth. Does the gas leave the disinfected articles uninjured, or are they depreciated in value by treatment with sulphur?

Sixth. What concentration of the gas suffices for the purposes, and what arrangement of the experiment is necessary to guarantee the results of disinfection?

Following this article in the same publication (pp. 234–282), is also one by Dr. R. Koch, in which, in connection with other disinfectants, he considers the amount of sulphurous acid and time necessary to kill certain microscopic organisms. With this mere notice of these papers we pass to a description of our own experiments.

For a confined space in which to burn the sulphur a room enclosed entirely by wood was at first used. The pine boards forming the walls, ceiling and floor were generally matched, but in spite of continued calking with rags its condition as to tightness remained unsatisfactory; however, three experiments with burning sulphur were performed and a part of the desired result obtained. It was then abandoned with the idea that the results with regard to the amount of sulphur which it is possible to burn in a given space would be of no value. We will call this room *Room A*, and the small bedroom with plastered walls, which was afterward used, *Room B*. Room A was 16½ feet long, 8⅓ feet wide and 11 feet high, and contained therefore 1,512.5 cubic feet, (42,831.8 litres or 42,831.5 cubic metres.) In one side was a window about 2 by 2½ feet; in the adjacent side, nearer the floor, was also a single pane of glass about 8 by 10 inches.

EXPERIMENT NO. 1.—ROOM A.

In a large tin pan (ordinarly known as a dish-pan), holding about 12 quarts, was placed an iron kettle holding 5½ quarts, and supported in the pan by an earthen plate; in the kettle was placed 6 lbs. of ordinary sulphur, and surrounding it in the pan was 8 litres (about 8 quarts) of water. The kettle stood in the water, therefore, to the extent of about half its height. In the water was placed a maximum and minimum thermometer. Before the larger window were suspended in the room one wire fly-trap with about a dozen flies, another with six or eight ants and another with half a dozen croton bugs (*Ectobia Germanica*). The fly-traps used in these experiments were made of tinned wire. Those painted with Paris green were in all cases avoided. There was also a thermometer so hung by the window as to show the temperature of the room from outside. Suspended on a line in about the centre of the room were 116 samples of various kinds of cloth, the coloring matter of which had been determined by Dr. O. Grothe.

ted of—

mples of all wool dress goods (Sicilian cord), dyed
combinations of logwood black, logwood brown,
digo carmine, and Bordeaux.

Eight samples of silk dress goods (silk cord), which were also variously dyed with Bismark brown, nigrosine, alkali blue 2 B, Bordeaux, trapæoline 3 O, No. 2, and roacelline.

Eleven samples of domestic calicoes, printed in many figures, with catechu brown, logwood black, logwood blue, alizarine red, aniline yellow and aniline blue.

Twelve samples of French satins, also printed with aniline black, aniline yellow, alizarine red, indigo, logwood black, fiset wood, eosine, nigrosine, Bordeaux and alkali blue.

Twenty-four samples of Scotch gingham, with different combinations of Bismark brown, logwood black, logwood blue, logwood brown, indigo, aniline blue, aniline yellow, alizarine red, alizarine rosa (tin salts), catechu brown, trapæoline O (chrysoine), trapæoline O 4, tumeric, fiset wood yellow, and Vesuvine.

Twenty-four samples of domestic cambrics variously printed, with aniline blue, aniline yellow, logwood black, logwood blue, logwood brown, alizarine red, catechu brown, indigo blue, indigo carmine, napthaline yellow, induline and wood blue with chromine.

Three samples of oriental flannels dyed with induline, malachite green and Bordeaux.

Sixteen samples of domestic flannels variously dyed, with Bordeaux, Victoria yellow, fuchsine, methyl violet, logwood black, alizarine red, induline and brilliant blue (alkali blue, 5 B).

Samples of each of these were retained for comparison afterwards. Those exposed to the sulphur fumes were numbered the same as the original, and with the additional mark of the letter "X."

The sulphur was ignited with burning alcohol and the room closed as soon as possible. The time necessary for killing the insects, as observed from the window outside, was as follows:

All flies were dead in 22 minutes; all ants were dead in 24 minutes; all croton bugs were dead in 25 minutes.

The temperature of the room as noted each half hour ran as follows:

10:30 A. M	73° F. at beginning
11:00 "	85°
11:30 "	91°
12·00 M	94°
12:30 P. M	*96°
1:00 "	97°
1:30 "	95°
2:00 "	93°
2:30 "	90°
3:00 "	89°
3:30 "	89°
4:00 "	88°
4:30 "	88°
5:00 "	87°
5:30 "	86°
6:20 "	85°

At 8:30 P. M. the room was opened. Of the 6 lbs. of sulphur introduced, 5 lbs. 12 oz. were burned; the remaining 4 ounces consisted of sulphur, sulphide of iron and impurities. Owing to the reduction of temperature it would not in any case be expected that the sulphur would be completely consumed. Of the 8 litres of water introduced 6.39 litres remained; 1.61 litres were therefore evaporated. The temperature of the water, which at the beginning was 71° F., had risen to about 158° F.

The samples of cloth were then arranged in series by the side of the original and exhibited to a number of persons, some of whom were experienced dry goods salesmen and were really experts in judging the qualities of fabrics. The general opinion was, that as to strength of fibre no change in any case could

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* The room became cloudy with smoke so that the burning sulphur could not at all times be seen; flame seen last at 1:30 P. M.

be discerned; that as to color one sample of Sicilian cord, colored with indigo and induline, and one sample of domestic flannels, colored with brilliant blue (alkali blue, 5 B), were very slightly faded; that one sample of oriental flannel colored with malachite green was not quite so bright; that one sample of oriental flannel and one sample of domestic flannel, each colored with induline, were somewhat faded; that with the remaining 111 samples there was no perceptible change. It is also observed that among the flannels only two were colored with induline, and that these, as above expressed, were the most affected of any, and that the only pieces of woolen dress goods which contained induline was the one which was very slightly faded.

EXPERIMENT NO. 2.—ROOM A.

In this experiment an attempt was made to reach the limit of sulphur which might be burned in the room; 32 lbs. 5 oz. sulphur was placed in two kettles; one kettle with 16 lbs. 4 oz., placed in the tin pan as before, was surrounded with 8 litres of water in the pan; the other kettle, with 16 lbs. 1 oz., was placed in a wooden tub and around it was 25 litres of water. In each case fully one-half the kettle stood below the surface of the water. There was also suspended in the room, the same as before, a set of samples of the same fabrics, from which those before used were taken, numbered the same, and for distinction marked with the letter "Y." The thermometer was also hung before the window, the sulphur ignited with alcohol and the room closed as before. The temperature of the room, as observed from the window, was as follows:

10.00 A. M	70° F.	2.30 P M	126° F.	
10.30 "	83°	3.00 "	129°	
11.00 "	87°	3.30 "	131°	Max. 55° C.
11.30 "	111°	4.00 "	131°	
12.00 M.	115°	4.30 "	130°	
12.30 "	119°	5.00 "	128°	
1.00 P. M	122°	5.30 "	121°	
1.30 "	124°	6.00 "	115°	
2.00 "	124°	6.30 "	109°	

At 9:00 P. M. it ceased burning. On the following day the room was opened. The sulphur fumes had escaped so that it could be entered immediately. Of the 16 lbs 4 oz. sulphur placed in the one kettle 6 oz. remained, and of 16 lbs. 1 oz. placed in the other, 9 oz. remained, or of the 32 lbs. 5 oz., 31 lbs. 6 oz. was burned; the remaining 15 oz. consisted of sulphide of iron, sulphur and impurities. Since the room contained about 1,500 cubic feet, the amount burned was nearly 21 lbs. per 1,000 cubic feet. The water surrounding the kettle was found to contain much sulphuric acid. From the following calculation it is concluded that the amount of sulphur burned was largely in excess of what was necessary to consume the oxygen of the air, and as the sulphur was practically all consumed the room must be considered as not sufficiently tight for the experiment.

The amount of sulphur necessary to completely consume the oxygen in 1,000 *cubic feet of air.*

Since the atomic weight of S is 32 and that of O is 16 (½ that of S), and since by burning sulphur SO_2 is formed, a compound with one atom of S and two atoms of O, the weight of sulphur in SO_2 is just equal to the weight of oxygen; so that the amount of sulphur necessary to completely burn the oxygen of the air is equal to the weight of the oxygen in the air. One litre of air at 0° C. weighs 14.43 criths (Cooke), or as 1 criths = .0896 gms., 1 litre of air weighs 1.2929 gms. At 55° C., the temperature to which the room was heated by the burning sulphur, 1 litre $= \frac{1.2929}{1 \times 0.00366 \times 55} = 1.0762$ gms.; 1 cubic foot = 28.318 litres, or 1,000 cubic feet = 28318 litres. In 1,000 cubic feet there are, therefore, 30475.8 gms., or 67.186 pounds of air. As 23.185 per cent. of the air is oxygen, the amount of oxygen in 1,000 cubic feet is 67.186x23.185 = 15.577; or, as shown above, 1,000 cubic feet of air would need for the complete burning of the oxygen 15.577 lbs. of sulphur. Of course the low temperature and the highly diluted state the oxygen of the air attains during the combustion would tend in practice to greatly reduce this amount. Vallin (in his *Traité des Désinfectants*, p. 243) states that experimentally M. Marty was able to burn only 68 gms.

per cubic metre, or about 4.2 lbs. per 1,000 cubic feet, and that Czerniki was able to burn in a large room 300 gms. per cubic metre, or 18.7 lbs per 1,000 cubic feet. The room in the latter case was undoubtedly not tightly closed, as a comparison of his results with the theoretical amount will show.

As to the effect on the fabrics in this experiment no difference could be noted from that of the experiment before given. The samples of cloth in both experiments are arranged in convenient form with the original cloth, and may be seen at the office of the Department of Health.

EXPERIMENT NO. 3.—ROOM A.

It having been asserted that burning sulphur is not always effective in killing insects, and especially flies, on the ceiling, another experiment was made to ascertain with more certainty whether flies were killed uniformly throughout the room when the usual amount of 3 lbs. per 1,000 cubic feet was used. To this end a window was placed next the ceiling by the upper, front, left corner of the room, and another by the diagonal corner of the left side next the floor. A fly-trap with a number of flies was placed by each window next to the ceiling and floor. Flies in traps were also placed at the upper, right hand back corner, and on the floor by the diagonal corner of the right side ; one was also placed on the centre of the floor, and another on the centre of the ceiling, and one by the window in the centre of the left side. There were also a good number of flies, perhaps 40 or 50, going where they chose in the room. An iron kettle with 4 lbs. 9 oz. sulphur was placed in water in the large pan, the sulphur ignited, and the room closed as before.

The flies next the ceiling, as observed from the window at the upper, front, left hand corner, were all dead in 23 minutes ; those by the large window at the side in 23 minutes ; those on the floor at the back left corner were dead in 50 minutes, while some of the flies loose in the room, which had collected mostly by a small window in the front, near the floor, lived for 1 hour and 45 minutes. The room was then immediately opened, the sulphur extinguished, and as soon as the room could be entered it was found that in all those portions of the room which could not be seen from the windows, all flies were dead.

It would seem, therefore, that when the flies are confined in a room not especially tight that they are able by the greater liberty afforded them to withstand the action of the sulphurous fumes much longer than when confined to a particular locality. The sulphur fumes, being heated, evidently rose at first to the upper part of the room. By weighing the kettle and the remaining sulphur, it was found that 4 lbs. of sulphur was burned.

EXPERIMENT No. 4.—ROOM B.

This room, provided with an ordinary window and door, measured as follows: 8 feet 2 inches long, 6 feet 2 inches wide, and 7 feet 7 inches high, containing therefore 375 cubic feet. All crevices were thoroughly calked. In an iron pot was placed 16 lbs. 3 oz. sulphur. This was placed in the above described tin pan and surrounded by 10 litres water. A maximum and minimum thermometer was hung on the wall, showing a temperature at the beginning of 76° F. In order to ascertain whether sulphuric acid would be formed, and whether the cloud of smoke arising from burning sulphur was due to the formation of this acid or to sublimed sulphur, or both, a pane of glass, 7 by 12 inches, was thoroughly cleaned, wiped dry with a clean cloth, and supported horizontally in the middle of the room by a clean glass support. The sulphur was ignited, the door thoroughly calked, and it being Saturday P. M., it was left to take its course. The sulphur continued to burn for about 12 hours. When opened on Monday the atmosphere was not endurable. The temperature of room had risen to 122° F. (50° C.) as shown by the maxi-thermometer. Of the 16 lbs., 3 oz. sulphur introduced, . 2 oz. had been consumed, or at the rate of 5⅔ lbs. per

1,000 cubic feet. The pane of glass was found to be covered with a fine dew-like deposit, and its extremely sour taste indicated that it must contain sulphuric acid. This was carefully washed with distilled water into a clean bottle. The washings unmistakably held sulphur in suspension. The amount of sulphur deposited on the pane of glass was determined after filtering from the sulphuric acid solution by oxidizing with nitric acid, precipitating and weighing as $Ba\ SO_4$. From this the amount of sulphur deposited on the glass plate was found to be .0014 grams. Since the surface of both sides of the glass plate was 168 square inches, and the surface of the ceiling and floor 14,504 square inches, the amount of sulphur deposited on the ceiling and floor would be .1208 grams. Assuming that it would be deposited on the walls at the same rate, which may not be entirely true, there would be deposited on the walls, ceiling and floor, .3817 grams, or about 5.88 grains of sulphur. This amount, though not large, is sufficient to account for the slightly dingy appearance of a room immediately after fumigation, and in part also for the cloud of smoke that arises from burning sulphur. The sulphuric acid in the filtrate as above obtained was precipitated as $Ba\ SO_4$ after the addition of HCl and the $Ba\ SO_4$ filtered and weighed. The sulphuric acid calculated therefrom was .0848 grams. The amount deposited on the ceiling and floor, as calculated from this amount deposited on the glass, is 7.3210 grams, and assuming as before that it would be deposited at the same rate on the walls of the room there would have been formed 15.2 grams, or about 234 grains of sulphuric acid.

EXPERIMENT NO. 5—ROOM B.

It being sometimes the practice to place the pot of sulphur on dry ashes instead of in water, the question arises as to whether by so doing there is the same amount of sulphur burned, and also whether the same amount and relative proportions of sulphuric acid and sulphur are set free as found in the preceding experiment. In order to ascertain these points the following experiment was arranged:

The large tin pan heretofore used was nearly filled with ashes and placed in the middle of the room. On the ashes was placed an iron kettle with 8 lbs. of sulphur. An ordinary pane of glass 9 x 12 inches was thoroughly cleaned and horizontally supported about 1½ feet from the floor, with a clean glass support. On the wall was also a maximum and minimum thermometer, showing a temperature at the beginning of the experiment of 80° F. The sulphur was ignited with burning alcohol and the room thoroughly closed. On opening the room the following day all smoke had subsided, but the sulphur fumes were so strong that the room could not be immediately entered. By weighing the pot of remaining sulphur it was found that 2 lbs. 7 oz. had been consumed, or at the rate of 6½ lbs, per 1,000 cubic feet, which, as will be seen, is ⅚ lbs. per 1,000 cubic feet more than was burned when the kettle was placed in water. Of course, this is due to the fact that the water takes some heat from the kettle and its contents, and thereby reduces its temperature. The thermometer on the wall showed a minimum temperature of 73 °F., and a maximum temperature of 113 °F.

On the glass plate was the same dew-like deposit as before, but showing the presence of sulphur much more distinctly. The deposit was carefully removed with distilled water to a glass receptacle, the sulphur filtered therefrom, oxidized with nitric acid and precipitated with barium chloride. By weighing the precipitate of $\mathrm{Ba\ SO_4}$ and calculating the sulphur, it was found that on the plate there had been deposited 0.0228 gms. sulphur. Calculating from this, the amount deposited on the ceiling and floor would be 1.5301 gms.

If deposited on the walls at the same rate the total amount formed in the room would be 4.8352 gms. (74.5 grains.) The sulphuric acid in the filtrate from the sulphur thus obtained was precipitated and weighed as $\mathrm{Ba\ SO_4}$, and from this it was ascertained that .1209 gms. $\mathrm{H_2\ SO_4}$ had been deposited on the glass plate, or 8.1145 gms. on the ceiling and floor. Calculating as before, the total amount deposited in the room would be 25.6397 gms.

The presence of sulphur and sulphuric acid as found in these experiments is in accordance with the statements of Vallin (p. 243 and 245.) He terms the sulphur thus formed, however, sublimed sulphur, or sulphur vaporized from the original mass and escaping the flame without being burned. From the following it will hardly appear that it is sublimed sulphur.

According to Richter sulphurous acid in aqueous solution gradually undergoes the following reaction :

$$3\ SO_2 + 2\ H_2O = 2\ H_2\ SO_4 + S$$

resulting from which we would see that sulphur and sulphuric acid are formed by the action of sulphurous acid on water, and in the proportion of 196 parts of sulphuric acid to 32 parts of sulphur.

The conditions in the case of burning sulphur for disinfecting purposes differs from these only in this, that the SO_2 and water are in the gaseous form. The relation between the amount of sulphuric acid and sulphur deposited on the glass plate in these experiments may be taken as approximately expressing the relation of the total amount formed, and this relation, especially in the latter case, is sufficiently near that of 196 to 32 to make it probable that it is formed from the decomposition of sulphurous acid.

Another point of chemical interest and which may also have some practical bearing in this connection, is the fact that much more sulphur and sulphuric acid are formed when ashes are used than when the receptacle for the burning sulphur stands in water. In all those cases, where the burning sulphur was surrounded by water, it has been observed that a considerable water is evaporated ; the atmosphere of the room must therefore be charged with moisture. It is known in the ordinary method of making sulphuric acid, that an excess of water or steam interferes with the oxidation of sulphurous acid, and, although the conditions are not the same in the two cases, the results above obtained show a resemblance in this respect.

As to the amount of water present when ashes are used, we know there is a small amount of moisture in ordinary atmosphere, and that when alcohol is used to ignite the sulphur, as in this case, some water is formed by the combustion of the alcohol, so it is apparent that there is a considerable water present to carry out the decomposition of the sulphurous acid. A fact of ordinary observation in a chemical laboratory is that a solution of sulphurous acid in water only very gradually undergoes decomposition, and that even in the presence of strong light some weeks may be necessary to make much change. This seems to corroborate the conclusion we would draw that an excess of water interferes with the decomposition of sulphurous acid, that if the presence of sulphurous acid is necessary to kill the organism the amount may be increased by avoiding the presence of too much water, and that if the formation of sulphuric acid is to be avoided, on account of its corrosive action, placing the receptacle in water is very effective to that end.

The effect of burning sulphur on the volume of confined air.

By burning sulphur in hermetically closed places, the question as to whether the volume will become changed so as to cause an injury to the walls, or a possible explosion, is considered as follows:

Since, by the consumption of the O in the air by burning sulphur SO_2 is formed, and since to form one molecule of SO_2 one molecule of O is necessary, we have formed according to he equation, $S_2 + 2\ O_2 = 2\ SO_2$, as many molecules of SO_2 as is consumed of O_2, and so according to Avogadros' law, the volume of SO_2 formed is equal to the volume of O_2 consumed, or in other words, there is no increase or decrease in the volume of the air except that which comes from expansion by heat.

It being very seldom that perfectly tight compartments are found, and as gases in general are very elastic, the amount of pressure exerted on the walls by such expansion would in most cases be insufficient to do any damage.

APPENDIX B.

Special Report of Veterinary Inspector L. McLean

—ON THE—

DISEASES OF DOMESTIC ANIMALS THAT AFFECT PUBLIC HEALTH.

DISEASES OF DOMESTIC ANIMALS THAT AFFECT PUBLIC HEALTH.

In submitting to you this my annual report of the Veterinary Department of your Board, I beg to state that, according to your instructions, the efforts of said department have been concentrated, with its limited staff, to the prevention of the use of the flesh and milk of diseased animals as articles of diet, special attention being directed to the exposure of milk to contaminating influences, due to defective sanitary arrangements of cow stables, within the jurisdiction of your authority, the same supervision being also extended to all milch stock whose owners hold permits to sell milk in this city, wherever they may be situated.

It has been proved beyond peradventure that the milk of diseased animals has conveyed some of the most deadly diseases to other animals as well as to human beings using the same; but irrespective of the normal and abnormal condition of the animals secreting the milk; its affinity for the absorption of diseased germs, when exposed to a contaminated atmosphere, renders it one of the most fertile mediums as a disease carrier.

Realizing those facts, a systematic and periodic inspection of the cow stables has been organized, and so far as possible all animals submitted to a physical examination, and the sanitary and dietetic arrangements of the stables and stock regulated in accordance with the ordinances of the Street Department, with the following results:

While in my last report there was stated to be 450 stables containing about 5,000 cows, of which ten per cent. were estimated as being in a diseased condition, there are to-day but 250 stables containing 1,800 cows within the city limits, of which not two per cent. are suffering from any contagious
affe On inspection, 18 cows have been found affected
sis, the use of whose milk has been at once sup-
he animals ordered to be isolated. During the
ases of acute contagious pleuro-pneumonia have

been put under the same prohibition, and 10 animals found affected with septicæmia and retention of the placenta, following abortion, have been similarly dealt with. The sanitary condition of every stable has been so improved as to strictly conform with the existing laws and regulations, the alterations requisite in not a few of said stables requiring an outlay of not less than $250. The passive resistance which was at first met with in enforcing these orders has greatly subsided, and as a rule stable owners now appreciate the good results they obtain even in a financial point of view.

To prevent the carcasses of diseased animals finding their way into the meat market, a rigid slaughter house inspection is the only effectual means that can be adopted, as, once the viscera have been removed, it is possible to obliterate all traces of even some of the most deadly diseases, rendering an examination of the live animal and of its viscera while being dressed imperative. While a store-to-store inspection will prevent the sale of putrefying meat, bob veal and blown mutton, little can be depended on such in the detection of diseased flesh. The good results obtained by this method are shown by the fact that from the 1st of January up to date 73,537, pounds of diseased meat have been found and condemned in the Brooklyn slaughter houses, this being the production of 92 cows affected with contagious pleuro-pneumonia, 23 with tuberculosis, 10 with anthrox, and 27 from various other causes, all of which it is safe to say would, in the absence of slaughter house inspection, have found its way into the market.

While the present system of inspection is as perfect as it can be with your limited staff, I cannot too strongly urge the necessity of the at present widely-separated slaughter houses being superseded by one public abattoir, whose management should be under the supervision of a scientific inspector connected with your department.

While the prevalence of contagious diseases amongst the dairy stock has been so perceptibly suppressed, any relaxation of the system in force would be an invitation for a relapse into the old condition, as your powers only enable us to control its prevalence, especially by improved sanitary measures, but to stamp out its existence much more drastic efforts would require to be employed.

Among city horses, I regret that glanders and farcy have been unusually prevalent, so much so, that while but one comparatively large stable has been seriously invaded, the total number of cases coming under my notice shows a significant increase. Out of over 5,000 horses inspected 183 were found to be so affected, and condemned, their destruction being recommended.

In regard to this matter, I beg to acknowledge the hearty co-operation we have received from I. R. Pye, Superintendent of the Brooklyn branch of the American Society for Prevention of Cruelty to Animals, whose officers attended to the destruction of the affected animals. In view of the contagious character of this disease, and that when contracted by man or beast it is always fatal, it is evident that your present powers do not go far enough to enable us to stamp out the same, and I would advise that an ordinance be passed making it compulsory for all owners and veterinary attendants to at once report the existence of all animals affected with, or exhibiting symptoms of glanders or farcy, to your Department.

There have also been inspected and condemned eight dogs, as exhibiting all the symptoms of hydrophobia.

Respectfully,

L. McLEAN,

Veterinary Inspector.

APPENDIX C.

A PROPOSED BILL FOR THE ERECTION, GOVERNMENT AND MAINTENANCE OF A

HOSPITAL FOR CONTAGIOUS DISEASES

[This Bill passed the Senate in 1885, and was on the order of its third reading in the Assembly when the Legislature adjourned.]

"AN ACT

To authorize the Department of Public Health of the city of Brooklyn to establish a hospital for contagious and infectious diseases and in relation to the erection, government and maintenance thereof."

SECTION 1. The Commissioner of the Department of Health of the city of Brooklyn is hereby authorized to select and adopt a site in or near the city of Brooklyn, subject to the approval of the Mayor of said city, for the erection of a public hospital for the reception and care of citizens and temporary residents of said city having contagious or infectious diseases. But any site selected therefor outside of the limits of the city of Brooklyn shall be subject to the approval of the local Board of Health having jurisdiction thereof.

SEC. 2. After such a site has been selected and adopted as aforesaid, and whenever funds therefor have been provided by the proper authorities, the said Mayor and Commissioner may purchase or lease such a site and take title thereto or the lease thereof, in the name of the city of Brooklyn, and thereupon it shall be the duty of said Commissioner to prepare plans for the erection thereon of a public hospital for the purposes aforesaid.

SEC. 3. After such plans have been prepared and approved by the said Commissioner, and as soon as means therefor have been raised or provided by the proper authorities, it shall be the duty of the Department of City Works of said city to proceed and construct the said hospital according to said plans.

SEC. 4. In case there shall be an epidemic of any such diseases, or in case there is likely to be any such epidemic before the said hospital is or can be erected, the Commissioner of the said Department of Health, with the approval of the Mayor, is
horized, provided there is at the time any money in
ury applicable thereto or provided therefor, to rent
uildings in said city, and to fit the same up for a

temporary hospital for the purposes aforesaid, and in case of any such epidemic after the erection of said hospital, the said Commissioner may, if in his judgment the exigencies of the situation require it, in like manner and under like conditions rent and fit up buildings as branches of said hospital. In case of the erection of the said hospital upon leased ground, the said Commissioner may, upon the expiration or sooner determination of the lease and of each lease taken pursuant to the provisions of this act, select a new site as in the first instance and cause the removal of the hospital thereto.

SEC. 5. The Board of Estimate for the County of Kings and the City of Brooklyn, are hereby authorized to include from year to year in their annual report such sums, as in their judgment ought to be raised for the purchase or lease of a site for or for the erection of said hospital, and the sum so reported, as revised by the Common Council of said city, shall be included in the annual tax levies of said city.

SEC. 6. The hospital erected or fitted up under the provision of this act shall be under the charge and control of the Department of Health of the City of Brooklyn, and the Commissioner of the said Department is hereby authorized to cause persons residing or being at the time in said city who have contagious or infectious diseases, to be removed to said hospital and to provide for the quarantine therein of persons exposed to such diseases, and the said Commissioner is also hereby authorized to prescribe rules and regulations for admission to and for the government of said hospital, and to fix the amount or amounts which patients or any patient treated therein ought reasonably to pay for such treatment (but no person shall be refused admission thereto by reason of his inability to pay for his treatment) and also to appoint such a number of physicians, employees and servants as may be necessary in said hospital in the same manner as other employees in his department are appointed, and fix the compensation the persons so appointed shall receive for their services.

SEC. 7. All moneys received from patients treated in said hospital shall be paid into the treasury of said city and applied to the maintenance of said hospital, and any excess necessary for the maintenance thereof over and above the sums so received shall be provided for and raised in the same manner as other expenses of the Department of Health of said city are provided for and raised.

SEC. 8. This act shall take effect immediately.

APPENDIX D.

Containing Circulars of Information and other Printed Forms in use in the year 1885, by the Department of Health.

Form 98. Sept. 1885.

CIRCULAR OF INFORMATION.

DEPARTMENT OF HEALTH,

OFFICE OF THE COMMISSIONER.

BROOKLYN, N. Y., September 2, 1885.

To Druggists, Confectioners and all Dealers in Soda Water, Lager Beer and other Beverages:

You are hereby notified of the following official action taken in reference to the sale of soda water, mineral water, lager beer and other beverages:

By virtue of the power conferred upon me by law, I do hereby declare the following practices dangerous and detrimental to the public health, and do prohibit the same in the city of Brooklyn.

First.—The storage, keeping, selling or having for sale of soda water, mineral water, or other beverage, in tin-washed copper fountains or vessels.

Second.—The storage, keeping, selling or having for sale of soda water, mineral water, syrups, flavoring extracts, lager beer, or other beverages, in vessels composed in whole or in part of copper, lead, zinc, or other poisonous material, in which the soda water, mineral water, syrup, flavoring extracts, lager beer or other beverage come in contact with the copper, lead, zinc or other poisonous material.

Third.—The selling delivering or draughting of soda water, mineral water, syrups, flavoring extracts, lager beer, or other beverage, through pipes, faucets or taps composed in whole or in part of copper, lead, zinc or other poisonous material, unless such pipes, faucets or taps are so lined, coated or protected as that the soda water, mineral water, syrup, flavoring extracts, lager beer, or other beverage, cannot come in contact with the copper, lead, zinc, or other poisonous material composing the same.

ve action was taken September 2, 1885.

Respectfully,

J. H. RAYMOND, M. D.,
Commissioner of Health.

Form 98, B.

CIRCULAR OF INFORMATION.

DEPARTMENT OF HEALTH,

OFFICE OF THE COMMISSIONER.

BROOKLYN, N. Y., July 16, 1885.

TO ALL DEALERS IN PICKLES:

You are hereby notified of the following official action taken in reference to the coloring of pickles with copper:

By virtue of the power conferred upon me by law I do hereby declare the practice of coloring pickles with copper, in any form, to be dangerous and detrimental to the public health, and do hereby prohibit the selling or having for sale, in Brooklyn, of pickles so colored.

The above action was taken June 26, 1885.

Respectfully,

J. H. RAYMOND, M. D.,
Commissioner of Health.

Form 3 C.

[Circular sent to Boards of Health and Paper Mills.]

DEPARTMENT OF HEALTH.

OFFICE OF THE COMMISSIONER, MUNICIPAL DEPARTMENT BUILDING,

BROOKLYN, N. Y., August 27, 1885.

Dear Sir:

I am endeavoring to collect statistics in reference to the danger of communicating contagious or infectious diseases through the medium of rags, both domestic and foreign.

Will you be kind enough to give me any facts which are known to you bearing upon this question, and refer me to any written or other evidence which will throw light upon it.

I should also like to have an expression of your views on the dangers connected with the handling of rags and the advisability of their disinfection.

Respectfully,

J. H. RAYMOND, M. D.,

Commissioner.

◆ ◆ ◆

Form 26.

☞ Put This Up in Your Stable.

DEPARTMENT OF HEALTH.

Office of the Commissioner of Health of the City of Brooklyn.

Your attention is called to the following Sections of the Sanitary Code and Regulations of this Department, applying to stables or premises where cows are kept for the production of milk in the City of Brooklyn.

§ 51. That no cattle shall be kept in any place in which the water, ventilation and food are not sufficient and wholesome for the preservation of their health, safe condition and wholesomeness of food.

§ 52. That no person shall keep, or allow to be kept, in any building, or any premises, or on grounds of which he may be the owner, lessee, tenant or occupant, more cows or other cattle than at the rate of fifteen to an acre, or, on an average, one to a city lot (in or near the built-up portions of said city), without a permit from this Board. And every such person shall cause every stable and place where any cows, horses or other animals may be, to be kept at all times in a clean and wholesome condition, and shall not allow any animal to be therein while infected with any disease, contagious or pestilential, among such animals, without a permit from this Board.

§ 53. That no cattle, swine, pigs or sheep, geese, goats, or horses, shall be yarded within, or adjacent to, the built-up portions of the City of Brooklyn without the permit of this Board, or otherwise than according to its regulations.

§ 92. That every owner, lessee, tenant and occupant of any stall, stable or apartment, in which any horse, cattle or swine, or any other animal, shall be kept * * * * * shall at all times keep or cause to be kept such stall, stables or apartments, and the drainage, yard and appurtenances thereof in a cleanly and wholesome condition, so that no offensive smell shall be allowed to escape therefrom * * * * * * Every such stall, stable or apartment where horses or cattle are kept, shall have a properly covered, water-tight manure vault or box, which shall not be allowed to become filled.

Under these sections, and the authority given it by law, the Department of Health has made the following regulations:

Regulation 11.—1. All stables, sheds or buildings in which cows are kept for the production of milk, shall be provided with a separate stall, not less than three feet in width, for each cow, and ventilators of such size and so located as to give through and through ventilation to the said stables or buildings.

2. When the said stables or buildings are located on a street where a public sewer exists they shall be connected with the sewer. If there is no sewer in the street they shall be connected with water-tight cesspools of proper size and construction, which shall at all times be kept in a cleanly and inoffensive condition. The flooring of the said stables shall be water-tight, and so laid that all liquids may run into the sewer connection or cess-pool.

3. Distillery waste, commonly known as "distillery swill," shall not be used as a food for cows; nor shall brewery grains in a condition of fermentation be used as food for cows; nor shall such brewery grains, whether in a condition of fermentation or otherwise, be the sole food of any cow whose milk is used for human food.

4. All cows that are being milked shall, in mild and pleasant weather, have at least four hours' exercise in the open air.

5. No permits will be granted for the establishment of new cow stables within the city limits, and all permits now in force will be revoked and annulled if the rules and regulations, or the ordinances of the city are violated by those to whom such permits have been granted.—*October* 15, 1883.

REGULATION 14.—That milkmen shall be required to have Ridgewood water on their premises when the pipes are in the street, and to discontinue the use of pump water for the purpose of washing their cans.

The officers of the Department of Health have been instructed to enforce the above provisions, orders and regulations, and a full compliance therewith will be necessary on the part of all proprietors of cow stables in this city.

Attention is also directed to the following section of the Sanitary Code, which describes the penalty for a violation of the above sections and regulations:

§ 184. That any person who omits, neglects or refuses to comply with, or who resists, any of the provisions of the foregoing ordinances, or who refuses or neglects to obey any of the rules, orders or sanitary regulations of the Board of Health of the city of Brooklyn, or who omits, neglects or refuses to comply with, or who resists any order or special regulation of the said Board of Health of the city of Brooklyn, shall be guilty of a misdemeanor, and liable to arrest, suit and prosecution therefor, and upon conviction of such offense shall be punished by imprisonment in the county jail not to exceed thirty days, and by a fine not exceeding two hundred dollars, nor less than ten dollars, or by both such fine and imprisonment.

J. H. RAYMOND,

Commissioner of Health.

* * *

Form 96.

DEPARTMENT OF HEALTH.

OFFICE OF THE COMMISSIONER,
MUNICIPAL DEPARTMENT BUILDING, ROOM 21.

BROOKLYN, N. Y., August 8, 1884.

DEAR SIR:

The Department of Health is investigating the question whether or not [illegible] Mineral Water, as dispensed in this city, are [illegible] public health. Will you be kind e [illegible] y answering the following queries, and returning the same as soon as possible. A hearing of the subject will be given at this office, August 12, at 10 A. M., to which you are cordially invited. It is desirable that the form be returned by the 9th inst., that all the answers may be tabulated for the hearing. Any additional information you can give bearing upon the question will be gratefully received.

Respectfully,

J. H. RAYMOND, M. D.,
Commissioner.

What kind of Fountain do you use?........................

If Copper Fountain is used, when and by whom was it re-tinned?..

Is it tin-washed, or lined with sheet block-tin?..............

Do you own Fountains, and how many? ....

When and how did you last test your Soda-Water for copper or lead, and with what result?.............................

What form of Draught Fountain do you use? How long have you used it?...

Was it new or second-hand when you bought it?............

State, if possible, whether the draught arm is lined with block-tin, or tin-washed? If the latter, when was it re-tinned?..

Do you use a combination stop-cock?......................

If so, how long has it been in use?..........................

When was it last cleaned out?...........................

What is the average time that the water remains in the fountain before being emptied? ....

What is the longest time?...................................

Do you keep your syrups in bottles, or in the Draught Fountain?..

If in the latter, of what material are the cans composed?....

Are the syrups drawn through faucets? ....

If so, state the form, whether combination, plug, or key faucet.

Are the couplings and faucets through which syrups are drawn well-lined with tin throughout?..........................

How often, and how do you clean your syrup tanks?.........

Do you make your own syrups?...........................

If so, do you use artificial flavoring extracts, or those made from fruits?..

To which syrups, and in what quantities do you add citric, or other acid?..

From whom do you purchase syrups or flavoring extracts?....

Do you make your own "Soda Water?"....................

If so, where do you obtain the water?......................

If not, of whom do you buy it?.............................

Do you dispense Mineral Waters from fountains?............

If so, state kind of Cylinder Fountain, Cooler and Draught Arm used, and how long they have been in use, and whether you have ever tested the water to see if it contained copper or lead?..

How did you test it, and with what result?

Have you ever known of any cases of Nausea or Sickness produced by Soda or Mineral Waters drawn from your or any other apparatus?....................................

If so, give names and particulars?..........................

To what do you attribute the sickness?....................

How often do you clean out your Draught Fountain?.........

When last?...

Have you any additional information bearing upon the subject, or any opinions to express?..........................

Name..

Address.......................................

Form 32,
1885.

RESTRICTION AND PREVENTION

—OF—

DIPHTHERIA, SCARLET FEVER, MEASLES, CHOLERA,

AND OTHER CONTAGIOUS OR INFECTIOUS DISEASES.

ISSUED BY THE

Department of Health, of Brooklyn, N. Y.

J. H. RAYMOND, M. D., Commissioner.

(*Printed both in English and German.*)

Diphtheria, scarlet fever, measles and small-pox are highly contagious diseases, attacking persons of all ages, and may be contracted from those who are already affected, from the clothes that they have worn, and from everything which has been in the room with them. The infection clings to the body even after death, and these diseases may therefore be contracted from the bodies of those who have died with them. Even the walls of the room may be a source of infection to persons coming into it after the patient has left it, unless the infectious material is destroyed. In order to prevent the spread of these diseases in a family or house where they exist, and to promote the recovery of the sick, the following simple measures should be conscientiously and rigidly carried out, thereby preventing much suffering and saving human life.

An upper, sunny room, provided, if possible. with an open fire-place, and with no children on the same floor, should be arranged for the patient by removing everything from it which can possibly be spared, such as books, clothing, carpets, upholstered furniture, and window curtains; also plants, birds and other pets, *remembering that when once the patient has entered the room, nothing can with safety be removed until disinfected.* By thus stripping the room of all articles except those absolutely necessary, the subsequent disinfection is much more easily performed. If it is deemed necessary, a few small rugs will take the place of the carpet.

The fire-place serves a double purpose, first, as a means of ventilation ; and second, by keeping a small fire burning therein, when the weather will permit, the pieces of soft muslin or other material, which should always be used instead of towels or handkerchiefs in wiping the secretions from the mouth or nose, especially in diphtheria, can readily be destroyed by fire, and thus contagion by their means prevented.

One or two adults should take the entire charge of the patient, under no circumstances coming in contact with other persons, especially children. Kissing and " taking the breath " of persons having contagious diseases are especially dangerous, and should always be avoided. Open windows and open fire-places, with fire in them day and night, avoiding draughts and chilly air, protect the sick and those who nurse them.

Nothing should be removed from the room when the patient has once entered it, until it has been thoroughly disinfected.

Books, scrap-books, toys or other playthings should always be destroyed at the termination of the sickness, as being undoubted carriers of contagion. Locks of hair and other keepsakes have also been known to spread contagion.

Nurses should keep themselves and their patients as clean as possible, remembering that the more the infection accumulates the more dangerous does it become. Special care should be taken in changing sheets and clothing, not to shake them or disturb them more than is absolutely necessary to remove them ; as these acts disseminate the particles of skin which are removed th them, and which convey the germs of disease, they should removed carefully and folded together and immediately nfected.

DISINFECTION.

It is a popular idea that anything which destroys an offensive odor is a disinfectant. This is not only erroneous, but harmful, as reliance is thus placed on substances that in nowise act as destroyers of infectious material, which latter substances are the only true disinfectants. The methods recommended in this circular are, to a considerable extent, based upon the results of the work of the Committee on Disinfectants of the American Public Health Association.

DISINFECTANTS.

The agents recommended herein for disinfection are—

1. Fire.
2. Boiling water.
3. Chloride of Lime or Chlorinated Lime, either dry, or in solution as Standard Solution No. 1.
4. Solution of Chlorinated Soda, diluted as Standard Solution No. 3.
5. Sulphur.
6. Bichloride of Mercury.

Bichloride of mercury, or corrosive sublimate, a powerful disinfectant, is included in the above list for one purpose only; that is, for the disinfection of privy-vaults which contain a large amount of material believed to be infected. As this circular is intended for general distribution, the writer hesitates to recommend for general use an agent which may, through improper use, endanger life.

Fire.—As already directed, the materials used in wiping away the discharges of the sick may be burned in the open fire-place, if such there be. In general, this method of disposal is to be recommended for all substances which have been exposed to infection, which cannot be treated with boiling water, and, could it be carried out in all cases, would make disinfection a very simple matter. If it is desired to burn substances suspected of being infected, and there is no fire in the room, such substances may be wrapped in a sheet soaked with Standard Solution No. 3, hereafter referred to, and in this condition conveyed to the fire in the furnace or elsewhere.

Boiling Water.—Experiment has demonstrated that boiling in water for half an hour will destroy the vitality of all known disease germs. This is therefore recommended as the best means to be employed in the disinfection of all articles which can be thus treated, such as the body-clothing of the patient, the bed-clothes, towels, &c. All utensils which are used in the room in the feeding of the patient, such as plates, tumblers, spoons, knives, forks, &c., should likewise be treated with boiling water before being removed from the room. Food itself, not consumed by the patient, should not be used by others, as it is liable to become infected in the sick room.

If, as will often be the case, there are no facilities for treating articles with boiling water in the sick room, they may with safety be removed to another part of the house for this treatment if they are carefully enveloped in a towel or sheet, as the case may require, which has been thoroughly soaked with either Standard Solution No. 1 or Standard Solution No. 3. Thus enveloped they should be put in water, and boiled for the required time.

Chloride of Lime.—This substance, also called Chlorinated Lime, to be effective as a disinfectant must be of the best quality, and in purchasing it only that should be accepted which is enclosed in glass bottles, as when packed in paper or wooden boxes, it is liable to have so deteriorated as to be worthless for disinfecting purposes. When dissolved in water, in the proportion of four ounces to the gallon, it forms the Standard Solution No. 1, recommended by the Committee on Disinfectants. The solution thus prepared is to be used in the disinfection of discharges in contagious diseases, especially in typhoid fever and cholera. One pint should be well mixed with each discharge; after ten minutes disinfection is completed, and the
s of the vessel may be then safely thrown into the privy-
water-closet. The expectorated matter of those sick
sumption should be discharged into a cup half filled
solution or with Standard Solution No. 3.

To thoroughly disinfect a privy-vault containing but a small amount of material, Standard Solution No. 1 should be used in the proportion of one gallon for each gallon of material in the vault. When thus disinfected, the contents should be removed. Subsequently, the material in the vault should be daily covered with the dry chloride of lime. It is only necessary to employ this large quantity in solution when there is reason to believe that the vault is infected, as with cholera or typhoid fever; when it is desired simply to deodorize it, a less quantity will probably accomplish the purpose. The cost of the Solution No. 1 is about three cents a gallon.

Solution of Chlorinated Soda.—To be effective this solution must contain at least three per cent. of available chlorine, and in purchasing it care should be exercised to obtain such a quality. This is sometimes spoken of as Labarraque's solution; but as this latter substance is too weak to act as a disinfectant the name is liable to mislead and is therefore here not used. The Standard Solution No. 3, of the Committee, is made by adding five parts of water to one part of the solution of chlorinated soda. The cost of this solution is about ten cents a gallon. When thus diluted it may be used for all the purposes for which Standard Solution No. 1 was recommended, and is of a somewhat more agreeable odor, though more expensive.

This solution should be used to cleanse portions of the body soiled with the discharges of those sick with infectious diseases, or the hands of attendants similarly soiled.

Bichloride of Mercury (corrosive sublimate) is recommended in this circular to be used only in the disinfection of privy-vaults which contain so much material believed to be infected with the germs of typhoid fever or cholera, that the disinfection by chloride of lime would be impracticable. In using this it should be dissolved in the proportion of one ounce of bichloride of mercury to one gallon of water; this quantity will disinfect four gallons of infected excremental matter.

TREATMENT OF THE BODY OF THE PATIENT AFTER RECOVERY OR DEATH.

When the patient has recovered he should be first sponged over with the solution of chlorinated soda, diluted in the proportion of one part to twenty parts of water; and, indeed, during the course of the illness occasional sponging of the body with this very dilute solution, under the direction of the attending physician, will be of value in preventing the escape from the surface of the body of infectious material. When, after recovery, the body has been thus sponged, not omitting the head and hair, a thorough washing of the body with soap and warm water should follow, and the patient dressed in clothes which have not been exposed to infection. This should take place in another room than the one occupied during the illness.

Should the case result fatally, the body should be thoroughly sponged with either Standard Solution No. 1 or No. 3, and then wrapped completely in a sheet saturated with one of these solutions, and enclosed in a coffin, which is to be closed, and the interment must take place within twenty-four hours, and be strictly private. If the interment is to take place at a distance requiring transportation by any other means than a hearse, the coffin must be of metal, or metal-lined, and hermetically sealed.

DISINFECTION OF THE CLOTHING AFTER RECOVERY OR DEATH.

The clothing of the patient should be treated in the manner already described as necessary during the sickness. Whatever can be boiled in water should be thus disinfected; articles which cannot be boiled should, if circumstances will permit, be burned; all other articles should be left in the room to be subjected to the fumigation hereafter to be described, and, until thus treated, the room and its contents should be closed with lock and key, to
any one from entering. If it is desired to burn any
d facilities for it do not exist in the house, the Depart-
ealth should be notified, and an officer will call and
articles for destruction.

DISINFECTION OF ROOM AND CONTENTS.

The room, having been vacated by the patient, should first be fumigated by burning sulphur. This fumigation should be done under the supervision of the physician or some other intelligent person. Upon application, it will be done by the Department of Health. Nothing should be removed from the room until this is completed, unless it has been disinfected in the manner already described. Everything to be fumigated should be so opened and exposed that the sulphur fumes can come in contact with all portions thereof. All cracks of doors and windows, fire-places or other channels by which the gas may escape, should be tightly closed, using cotton wadding when necessary. For a room ten feet in all its dimensions—that is, one containing one thousand cubic feet of air space—two pounds of broken sulphur and one pound of flower of sulphur should be provided, and an increased amount for larger rooms, in the same proportion. This quantity is important, as less will not efficiently accomplish the desired disinfection. The sulphur should be put in an iron pot, and this placed on bricks in a large wash-tub half filled with water, or in a large coal-scuttle containing wet ashes. This precaution is necessary to prevent setting fire to the floor, which would occur if the pot were placed directly on the floor or carpet. The vessel containing the sulphur should not be one with soldered joints, as the intense heat would melt the solder. A pot capable of holding one gallon is about the right capacity for three pounds of sulphur. The pot should be placed in the centre of the room, if the room is a large one, containing several thousand cubic feet of air space, several pots should be provided, distributed at different points. Everything being in readiness, sufficient alcohol to moisten the sulphur should be poured on it, a lighted match applied, and when it is seen that the sulphur is well ignited, the room should be left and the door shut, and all cracks outside, including the key-hole, closed by paper, cotton, or other material. At the end of ten hours the fumigation is completed. Great care should be exercised in emptying the room of the sulphur fumes, as these cannot be safely breathed and are excessively irritating to the eyes and throat. If possible, a window should be opened from the outside, and through this the fumes permitted to escape; if this is impracticable, all the windows and doors of adjoining rooms should be opened, and then the door of the fumigated room, and through these outlets the fumes allowed to find an exit, Thorough airing will remove the slight odor which remains.

The fumigation being completed, all wookwork, as of floors, windows and doors, and the walls and other surfaces should be washed over with Standard Solution No. 3; particular attention being paid to cracks, crevices and out-of-the-way places, in which dirt ordinarily finds a lodgment and from which it is with difficulty removed. A subsequent washing with hot water and soap will complete the cleansing process, and the room may be considered again habitable.

ADDITIONAL PREVENTIVE MEASURES.

TO BE EMPLOYED IN THE ABSENCE AS WELL AS IN THE PRESENCE OF CONTAGION.

See that the whole house from cellar to attic is clean. Keep the cellar dry, well ventilated and well white washed, and never allow, even for a day, garbage or other filth to be kept in it.

Open the windows of sleeping rooms every day for as long a time as possible, and in every way obtain as much fresh air as possible.

Abolish the privy in the yard if there is a sewer in the street, and substitute a well-flushed water-closet; if there is no sewer see that the vault is water-tight, emptied frequently, and kept inoffensive and innocuous by the abundant use of the Standard Solution No. 1, previously referred to, and subsequently sprinkling the dry chloride of lime freely over the surface of the contents daily.

Be sure that there are no leaks or defective traps or joints in the drain pipes of the house. through which the gases from the decomposing filth contained therein can enter to pollute the air

rooklyn are especially fortunate in having a
all the public pumps furnishing impure

water have been permanently closed. Should there at any time be any suspicion cast upon the drinking water, as when citizens are away from home, the drinking water should be boiled ; this is to be rigidly carried out in epidemics of typhoid fever or cholera.

Unripe or stale fruit and vegetables, and those of difficult digestion, should be avoided at all times, particularly during the prevalence of cholera.

When the children complain of sore throat, send promptly for a competent physician ; a few hours' delay may cost their lives. If the disease is pronounced contagious, see that it is reported at once to the Department of Health, and keep the other children from schools of all kinds until a permit is procured for their return. Members of the family should not attend social or other gatherings so long as the disease continues. Keep the patient and the attendant quarantined from other members of the family and house. The Inspector of the District in which you live will call at your house as soon as the Department is notified and will give all possible advice and assistance, and will, upon application, furnish the school permits when the danger is passed.

SCHOOL PERMITS.

School permits will be given, on application, by the Inspector, as soon as the patient has fully recovered and the sick room has been disinfected ; in cases of scarlatina and measles this will not be until desquamation—or peeling off of the skin—is completed.

The measures here recommended are to be used in all contagious diseases, whether diphtheria, scarlet fever, measles, smallpox or others.

☞*Read this carefully, and preserve it for reference in the sick room, reading it over when you have nothing better to do, and burn it when the case is terminated. Additional copies can be had on application.*

Form 82, H.

TYPHOID FEVER IN 1885.

PRELIMINARY REPORT.

DEPARTMENT OF HEALTH, MUNICIPAL BUILDING,
BROOKLYN, N. Y., January 1, 1886.

To the Physicians of Brooklyn :

The following is a preliminary report only. A complete summary is being prepared of the cases reported during the year 1885, together with the history of each case, so far as it could be ascertained, and of the plumbing of 1,400 houses in the districts specially affected, including that of every house in which the disease occurred :

From the examination made by this Department into the subject of typhoid fever, the following facts are deduced and recommendations made :

First—That typhoid fever is a disease which prevails more in the Autumn than at other seasons of the year, and that Autumns in which the temperature is high are more favorable for its development and spread than those in which the mercury is near the feezing point; and that the Autumn of 1885 has been one of high temperature.

Second—That typhoid fever exists in this city, as it does in almost every city, town and village throughout this country and Europe.

Third—That it has existed to a greater or less extent in this city since the year 1848, the date of the first records of mortality.

Fourth—That no record worthy of the name has ever been made of the number of cases of this disease which have occurred in Brooklyn, and therefore no comparison, based on cases, can be made as to its prevalence throughout the city, or any portion thereof, for different years.

Fifth—That the only figures which are available for purposes of comparison are the certificates of death which are filed by the attending physicians; and that, as typhoid fever is a disease which does not vary greatly as to its mortality in different years, the record of deaths may be regarded as a fair indication of its prevalence.

Sixth—That a study of this record of deaths, as given in the subjoined table, demonstrates that in the following years the disease was more prevalent than during 1885: viz., 1848, 1849, 1851, 1852, 1854, 1859, 1860, 1861, 1862, 1863, 1864, 1865, 1866, 1867, 1868, 1869, 1870, 1872 and 1873, and that it was less prevalent in the years 1874, 1875, 1876. 1877, 1878, 1879, 1880, 1881, 1882, 1883 and 1884.

Seventh—That during the year 1885 the disease has been more prevalent in two sections of the city than elsewhere, and that both of these sections are upon comparatively high ground.

Eighth—That the Ridgewood water supply is in nowise connected with the origin or spread of typhoid fever in Brooklyn.

Ninth—That the disease is not due in Brooklyn to decayed vegetation, nor to wooden pavements, nor is it, except in an extremely small number of cases, traceable to milk.

Tenth—That in some instances persons have contracted the disease out of the city, and have returned to the city either sick or with the disease in their systems, which has subsesequently developed; that in other instances the disease has undoubtedly originated in the city.

Eleventh—That the germ or infectious element is contained in the discharges of the patients.

Twelfth—That a thorough disinfection of these discharges has never been practiced, but they have in an infected condition been thrown into the sewer pipes of the house from which the infectious element has been given off, and have in this way communicated the disease to other members of the same household.

Thirteenth—That passing from the house pipes into the public sewers in an infected condition, these discharges have contaminated the sewers, and the sewer air, tending always toward high levels and finding a ready entrance into other houses, especially those in the immediate neighborhood, through defects in plumbing, carries with it the infectious element, and thus the disease is conveyed to other households.

Fourteenth—That the neglect of complete and thorough disinfection of the discharges of the patients is the principal cause of the spread of typhoid fever, and that if this measure could be rigidly and conscientiously carried out, the disease would be reduced to cases which contract the disease outside the city, and those which contract it through infected milk, which latter number is so small as practically to be of no moment.

Fifteenth—That inasmuch as typhoid fever is a disease which does not early declare itself so as to justify a diagnosis of that disease ; and inasmuch as it is considered probable by competent sanitary authorities that some forms of diarrhœa and dysentery are infectious, and spread by means of the discharges of those attacked, it should be the practice of physicians to recommend, and of householders to enforce disinfection of the discharges of all persons suffering with diarrhœal affections.

Sixteenth—That for this disinfection only those materials should be employed which have met the tests of experts, such as chloride of lime and solution of chlorinated soda (see circular on "Restriction and Prevention of Contagious Diseases," pp. 6 and 7, issued by the Department), and that all preparations which have not thus been found efficient, even though largely indorsed, should be discarded.

Seventeenth—That the plumbing of all houses throughout the city should be carefully examined, all defects remedied, and the best means adopted for disconnecting the house-pipes from the street sewer, and for insuring a complete circulation of fresh air through the sewer-soils, and waste-pipes of the houses, *Eighteenth*—That experiments which have been recently conducted in disinfecting with chloride of lime the sewers in the streets where typhoid fever existed encourage the hope that good results may be obtained by the disinfection of sewers in districts in which infection exists, but that this can only be of value for a short time, and in conjunction with systematic disinfection of the discharges within the house.

Nineteenth—That the substitution of perforated for tight manhole-covers, which has been carried on by the city as rapidly as the money available for that purpose would admit, should be completed at the earliest possible moment, so that the public sewers will be thoroughly ventilated, and accumulations of sewer-air prevented. A special force should be constantly employed to keep the openings in these covers free from dirt, snow and ice, so that they may at all times be unobstructed.

Twentieth—That the house-to-house inspection which has been made in the two sections of the city already referred to should be continued, until the condition of the plumbing of every occupied dwelling in the city be ascertained and the defects remedied; and that in view of our own experience and that of the health officer of Detroit, Mich., disinfection of the public sewers should be continued in all sections of the city where contagious diseases prevail, until further experience shall demonstrate whether such disinfection is, or is not, efficacious.

The following table shows the deaths from typhoid fever from 1848 to 1885, with ratio per 1,000 of population :

YEAR.	Population.	Deaths from typhoid fever.	Ratio per 1,000 of population.	YEAR.	Population.	Deaths from typhoid fever.	Ratio per. 1,000 of population.
1848	82,974	70	.843	1868	352.500	103	.292
1849	90,774	34	.375	1869	373,600	96	.257
1850	*98,574	20	.202	1870	*396,099	111	.279
1851	119,915	42	.350	1871	412,000	92	.223
1852	141,256	43	.304	1872	428,500	149	.347
1853	162,597	29	.178	1873	445.800	103	.231
1854	183.938	63	.340	1874	463.735	81	.175
1855	*205,280	30	.146	1875	*482,493	102	.211
1856	217,556	40	.186	1876	498,300	89	.179
1857	229,832	46	.200	1877	514,300	82	.160
1858	242.108	51	.211	1878	531 100	59	.111
1859	254,384	59	.232	1879	548,500	59	.110
1860	*266,661	85	.318	1880	*566,689	71	.125
1861	272,551	116	.425	1881	583,220	99	.170
1862	278,441	129	.464	1882	604.356	93	154
1863	284,331	131	.461	1883	624 118	92	.147
1864	290,221	177	.610	1884	644,526	107	.166
1865	*296,112	250	.844	1885	665,602	150	.225
1866	313,800	207	.660	1885	700,000	150	.214
1867	330,600	111	.335	1885	725,000	150	.207

Attention is called to the ordinance requiring reports of all contagious diseases, including *typhoid fever*, and physicians are requested to be, hereafter, as prompt and thorough in sending in their reports of this disease, as they have been hitherto in reporting scarlet fever, diphtheria, &c.

"Sec. 123. That every physician shall report to the sanitary bureau, in writing, every person having a contagious disease (and the state of his or her disease, and his or her place of dwelling, if known), which such physician has prescribed for or attended for the first time since having a contagious disease, during any part of the preceding twenty-four hours.

"Sec. 5. * * * That the phrase 'contagious disease' shall be held to include all persons sick, affected or attacked by a disease of an infectious, contagious or pestilential nature (more especially, however, referring to the cholera, yellow fever, smallpox, diphtheria, ship or typhus, typhoid, spotted, relapsing and scarlet fevers), and also including any new disease of an infectious, contagious or pestilential nature, and also any other disease publicly declared by this Board dangerous to the public health."

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*Census years. For all other years the population is estimated. For 1885 e estimated population was 665,602 ; for 1886 it is estimated at 690,000 ; it is obably over 700,000.

Respectfully,

J. H. RAYMOND, M. D.,
Commissioner of Health.

Form 27, 1885.

DEPARTMENT OF HEALTH.

BROOKLYN, January 8, 1886.

CONSTRUCTION OF DRAINS, SOIL-PIPES AND PLUMBING OF NEW BUILDINGS.

[Under Section 3, of Chapter 450, Laws of 1881.]

PLANS AND DRAWINGS.

25.—I. There must be a separate plan for each house, giving the exact location of the same in the manner specified in the plan including the ward, block number, lot number and street number, when possible.

II. Every plan must contain a clear description of the plumbing, on a blank prescribed and supplied for this purpose, showing size, kind and weight of pipes and kind of traps, closets and fixtures to be used.

III. Plans will be approved or rejected within ten days from time of filing.

IV. All drawings must be legibly drawn in ink on heavy white paper, or on tracing linen.

V. The size of the paper or linen must be 8 by 12½ inches, or 12½ by 15 inches, and the drawing so made as to have not less than an inch margin outside thereof. The former size is preferred, and should be used whenever practicable.

VI. One vertical drawing will be sufficient for a building when it can be made to show all the work. If the work is intricate and cannot be shown by one drawing, two or more should be made.

VII. This Department must be notified when any work is ready for inspection, and all work must be left uncovered and convenient for examination until inspected and approved. All notifications of this nature must be in writing, specifying the plan number.

VIII. After a plan has once been approved no alteration of, the same will be allowed except on the written application of the owner. All applications for information or decisions as to the meaning of any of the rules, or for modifications of the same in special cases, must be made in writing on forms provided for that purpose, stating the reasons for such applications. Whenever application is made to use in new buildings any appliances for the employment of which the permission of this Department is necessary, such application must be made in writing, and must be accompanied by a sample of the said appliance, to be left permanently at the office of this Department.

CONSTRUCTION OF WORK.- SOIL PIPE.

IX. The main sewer pipe must have a fall of at least one-half inch to the foot. When practicable it must be run on the cellar wall, securely fastened thereto, and must in such case be of iron. When it is impracticable to run the sewer pipe on the cellar w[illegible] v be laid in a trench beneath the base-
n [illegible] and may in such case be either of iron
[illegible] hereafter specified. This trench must
[illegible] Department gives permission to close it.

X. That where sewer pipes are to be placed in the ground, cast-iron pipes one-half inch in thickness, or glazed earthenware pipes one and a quarter inches in thickness and with hubs three inches deep, will be required ; that joints on earthenware pipes must be made with Portland cement, sand and iron filings, thoroughly mixed before wetting with a weak sal ammoniac solution ; that all pipes laid beneath the ground, whether iron or earthen, must be filled with water, and shown so filled to the inspector.

XI. The main sewer must be trapped with a running trap of the same material and size as the sewer-pipe, and must be located inside the front wall of the building. No connection with the house sewer for the discharge of sewage or rain-water, all hand-hole caps must be screwed down, and no hand-hole or other convenience for inspecting or cleaning, or for any other purpose shall be made on the street side of said trap. The trap must be provided with a hand-hole, for convenience in cleaning. There must be a fresh-air inlet-pipe entering the sewer-pipe inside and close to the said trap, of a diameter not less than three inches, leading to the outer air, and opening at any convenient place away from windows.

XII. Hand-hole openings, four inches in diameter, must be provided on all pipes laid beneath the ground ; said openings to be closed with brass ferrule and screw cap, and one such opening be required at each branch, and one at each end of the cellar in the main line ; said screw caps to project above the level of the cellar-floor ; or, if they do not project above the cellar-floor, man-holes must be provided in order to give access to them.

XIII. An opening must be provided in the cellar walls of all buildings for the entrance of the sewer-pipe ; said opening to be two inches clear of the pipe on the top and both sides, to avoid injury by settlement.

WASTE PIPES.

XIV. All waste or soil-pipes must be continued, full-bore, above the roof, without return bend, and provided with a wire screen at top. Lead pipe may be used for horizontal lines two inches or less in diameter. All other waste-pipes, two or more inches in diameter, must be of iron. The term waste-pipe or soil-pipe includes all branches taken off the main lines and continued, vertically or horizontally, seven or more feet. The size of waste-pipes shall be as follows: Those that receive the discharge from eight sinks or basins shall be 3 inches in diameter at least; those that receive the discharge from three to seven sinks or basins shall be 2 inches in diameter at least, and those that receive the discharge from one or two sinks shall be not less than 1½ inch. Waste-pipes from safes under wash-basins or other fixtures must not connect directly with any sewer, soil-pipe or other waste-pipe. Waste-pipes from refrigerators, if carried to the sewer, must first discharge into a drip-pan, and be provided with a trap and stop-cock between said drip-pan and sewer.

XV. All main pipes receiving the discharge from water-closets and other fixtures must be of iron; must be sound, free from holes and of a uniform thickness, and what is known as extra heavy pipe, weighing as follows:

2	inches,	5½	pounds	per lineal foot.
3	"	9½	"	"
4	"	13	"	"
5	"	17	"	"
6	"	20	"	"
7	"	27	"	"
8	"	33½	"	"
10	"	45	"	"
12	"	54	"	"

Corresponding fittings will be required. All branches or deviations from straight lines must be made with proper fittings. Soil and waste pipes must in all cases be continued, of undiminished size, at least two feet above the roof, without return bend, and provided with a cap, grating or screen at the top.

XVI. Air-pipes must be of iron or lead (sheet metal will not be permitted), and must not terminate in chimney-flues. They must be carried up inside of the house. When more than one water-closet discharges in the same vertical line of soil-pipe, a separate air-pipe connection, not less than two inches in diameter, must be provided for the trap of each, which pipe may connect with the soil-pipe above the upper water-closet. When the trap of the water-closet is set two or more feet from the vertical line of soil-pipe, a return connection must in all cases be provided, even where there is but one water-closet on the line. Air-pipes from several traps may be combined by branching together, and then carried into a soil-pipe above the inlet from the highest fixture, or continued above the roof. The weight of material for air-pipes shall be the same as that specified in the case of soil and waste-pipes, except that the use of extra strong wrought iron pipe or ordinary galvanized wrought iron pipe of the present standard thickness will be permitted for back vent and separate air-pipe connections ; in all cases cast steam fittings must be used.

XVII. All rain water conductors which are carried up within the walls of a building must be of iron, as required for soil pipe. Connections with such rain water conductors along their vertical course for the discharge of sewage or waste water therein will not be permitted.

TRAPS.

XVIII. Every wash basin, bath tub, sink, urinal, water closet, or other fixture connected with the sewer pipe of any building, shall be separately trapped as close to the fixture as possible. Water sealing traps of any pattern may be used when separate air pipe connections from the top of the same are provided; where separate air pipe connections are not provided, traps which will not unseal must be used. A trap will be considered as unsealed if, when siphoned, it shows a water seal less than three-quarters of an inch in depth. This rule does not apply to traps of water closets.

XIX. No overflow connection shall be made with any part of a trap, except into the inlet pipe thereof, and above the body of the trap; and no connection of any waste pipe—other than that from the fixture to be trapped—will be permitted to enter the body of the trap.

WATER-CLOSETS, PRIVIES, &c.

XX. *On Streets that are Sewered.*—All buildings that are located upon a street in which a public sewer exists, must be provided with water closets, either in the house or yard; privy-vaults will not be permitted when a public sewer exists in the street.

Water-closets will not be permitted in any room or apartment that has not a window, having an area of at least four square feet, opening directly to the external air; they will, however, be permitted in rooms or apartments having no windows communicating directly with the external air, provided that there is an air shaft extending up to or above the roof and having an area of not less than four square feet, with an opening to the external air of an equal area; this opening at the top of the air shaft can be arranged by extending the shaft above the roof and providing a sash, of an area equal to that of the shaft, which can be controlled by cord and pulley from below.

In no class of buildings, whether public, private, or tenement, will water-closets be permitted in cellars. [A "cellar" shall be taken to mean and include the lower story of any building or house, of which one-half or more of the height from the floor to the cellar is below the level of the curb of the street adjoining.] In tenement houses, gangs of water-closets will not be permitted in the basement, unless a ventilating shaft (as above described) of an area not less than four square feet is provided.

Iron privy-sinks will only be permitted when located in the yard, under the same conditions as privy vaults; they must be set on the surface of the ground, and no masonry will be permitted on top of the casting.

All water-closets must be furnished with a sufficient supply of water to keep them at all times clean and well flushed.

All water-closets located above the first story must be supplied from a tank, which must hold not less than eight gallons of water for each water-closet which it supplies.

XXI. *On Streets that are not Sewered.*—Water-closets will not be permitted in any buildings situated upon a street that is not sewered; in such cases, water-tight privy-vaults must be provided.

Waste water from houses situated on unsewered streets must be conveyed to cesspools that are water-tight; into these cesspools rain-water must not be conducted; rain-water must be conveyed to cisterns that are water-tight or to the street gutter.

No privy-vault, sink, cistern or cesspool shall hereafter be made or rebuilt in the city of Brooklyn, within twenty feet of any dwelling or factory, without a special permit in writing from this Board. All vaults, sinks, cisterns and cesspools shall be made and kept water-tight. This must be done in one of the following ways: By the use of a crock or vessel of glazed earthenware, not less than one and a quarter inches in thickness; or by a cast or wrought iron vessel, one half-inch in thickness; or by brick mason-work, constructed as follows: The inner four inches of the bottom and sides must be of hard brick soaked in tar, or dipped and laid in hot roofing-cement; if tar-soaked bricks are used, the inner surface of the vault, cesspool, &c., must in all cases be covered over with roofing cement, applied hot.

XXII. All water-tight closets located above the first story must be supplied from a tank.

XXIII. All joints in iron pipe must be filled with lead and securely calked. Cement and putty joints will not be permitted. All connections of lead with iron pipe must be made by soldering the lead pipe to a brass thimble or ferrule with wiped or overcast bolted joints. All ferrules must be of brass, either cast or drawn, and be not less than one-eighth of an inch in thickness.

XXIV. No opening shall be provided in the sewer pipe of any building for the purpose of receiving the surface drainage of the cellar unless special permission is granted, and any opening so made must be immediately and permanently closed when directed by this Department.

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